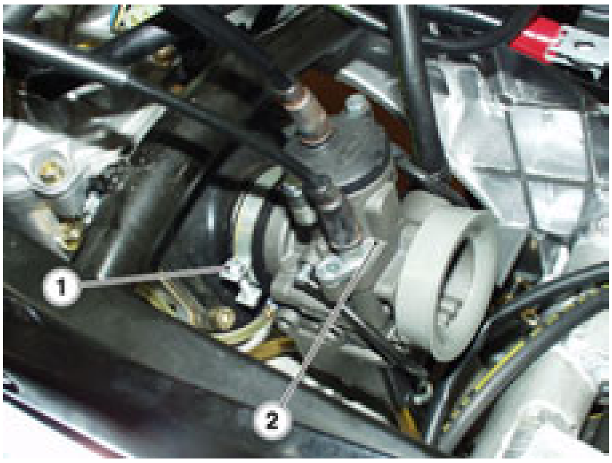
4.3. CARBURETOR

4.3.1. CARBURETOR REMOVAL

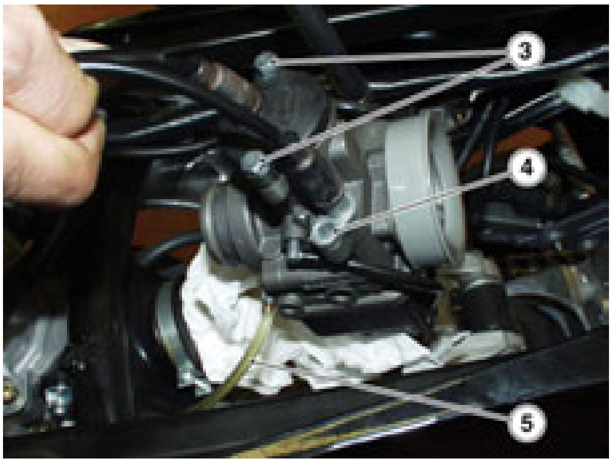
Read 1.2.1 and 1.3.1 carefully.

- Remove the airbox.
- Slacken the clip (1).
- Ease the carburetor (2) off the intake manifold.
- Block off the intake manifold with a cloth to prevent the ingress of debris into the engine.



- Release and remove the two screws (3).
- Remove the throttle cable complete with needle and slide.
- Release and remove the screw (4) and remove the complete throttle cable.
- Remove the hose (5) of the mixer oil pump.

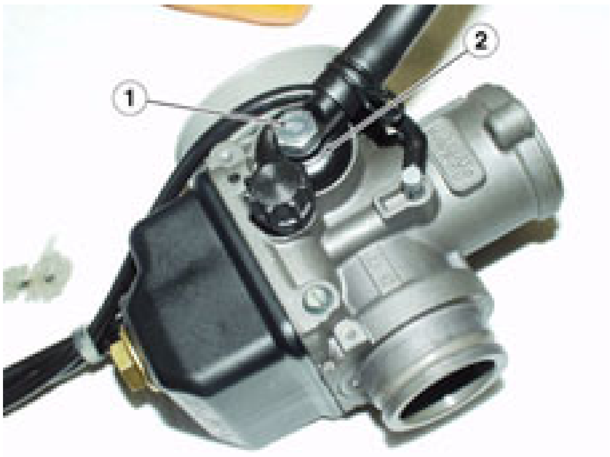
NOTE *Place some paper underneath the hose (5) to collect any oil spillage.*



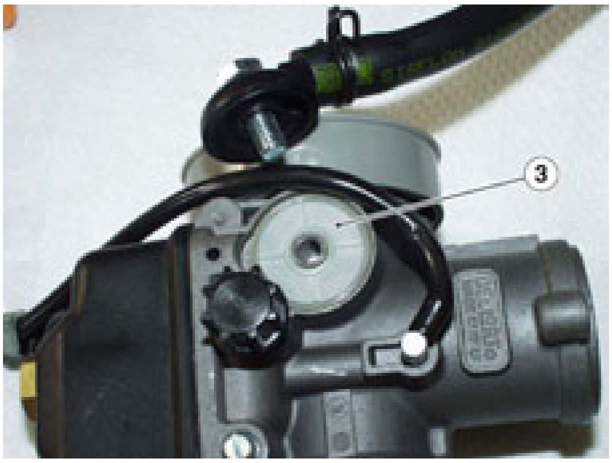
4.3.2. REMOVING THE FUEL FEED FILTER

Read ☞ 1.2.1 and ☞ 1.3.1 carefully.

- Close the fuel cock.
- Lift the fuel tank; see ☞ 2.9.1.
- Release and remove the screw (1).
- Remove the cap (2).



- Remove the fuel filter (3).



NOTE *Place some paper under the cap to collect any fuel spillage.*

4.3.3. CARBURETOR SPECIFICATIONS 1999-2002

Description	Dimensions	Countries	Model
Carburetor	phbh 28 bd	B-D-E-F-I-SF	11kW-MP
	phbh 28-bd	AUS-B-D-DK-E-GR-J-NL-P-SGP-UK	f.p.
	phbH 28-Rd	CH	f.p.-MP
	phbh 28 bd	-	11 kW -SF
	phbH 28-Bd	D	80km
	phbH 28-Bd	A	11 kW -MP
Tapered needle	25/3a	A-AA-AUS-B-D-DK-E-EU-F-GR-I-J-JJ-NL-P-SF-SGP-UK	-
	56/2aX	CH-EU	-
Throttle valve return spring		A-AA-AUS-B-D-DK-E-EU-F-GR-I-J-JJ-NL-P-SF-SGP-U	
Throttle valve	40	B-D-E-F-I-SF	11 kW -MP
	50	A	11 kW -MP
	45	-	11 kW -SF
	50	AA-AUS-B-D-DK-E-EU-GR-J-JJ-NL-P-SGP-UK	f.p.
	55	CH-EU	f.p.
	50	D	80km
Idle emulsioner jet	50	CH-EU	f.p.
	62	-	f.p.
	62	-	11 kW -SF
	65	-	11 kW -MP
	65	B-D-E-F-I-SF	11 kW -MP
	62	-	f.p.
	65	A	11 kW -MP
	65	D	80km
	62	/	11 kW -SF
Atomizer	BN 266	AA-AUS-B-D-DK-E-EU-GR-J-JJ-NL-P-SGP-UK	f.p.
	T 262	CH	f.p.-MP
	BN 264	D	80km
	BN 264	-	11 kW
Starter jet	70	-	-
Main jet	115	D	80km
	110	B-D-E-F-I-SF	11 kW -MP
	115	-	11 kW -SF
	115	A	11 kW -MP
	115	CH	f.p.-MP
	120	AUS-B-D-DK-E-GR-J-NL-P-SGP-UK	f.p.
Needle valve	250	/	/
Power jet	90	CH	f.p.-MP

COOLING SYSTEM 5

SUMMARY

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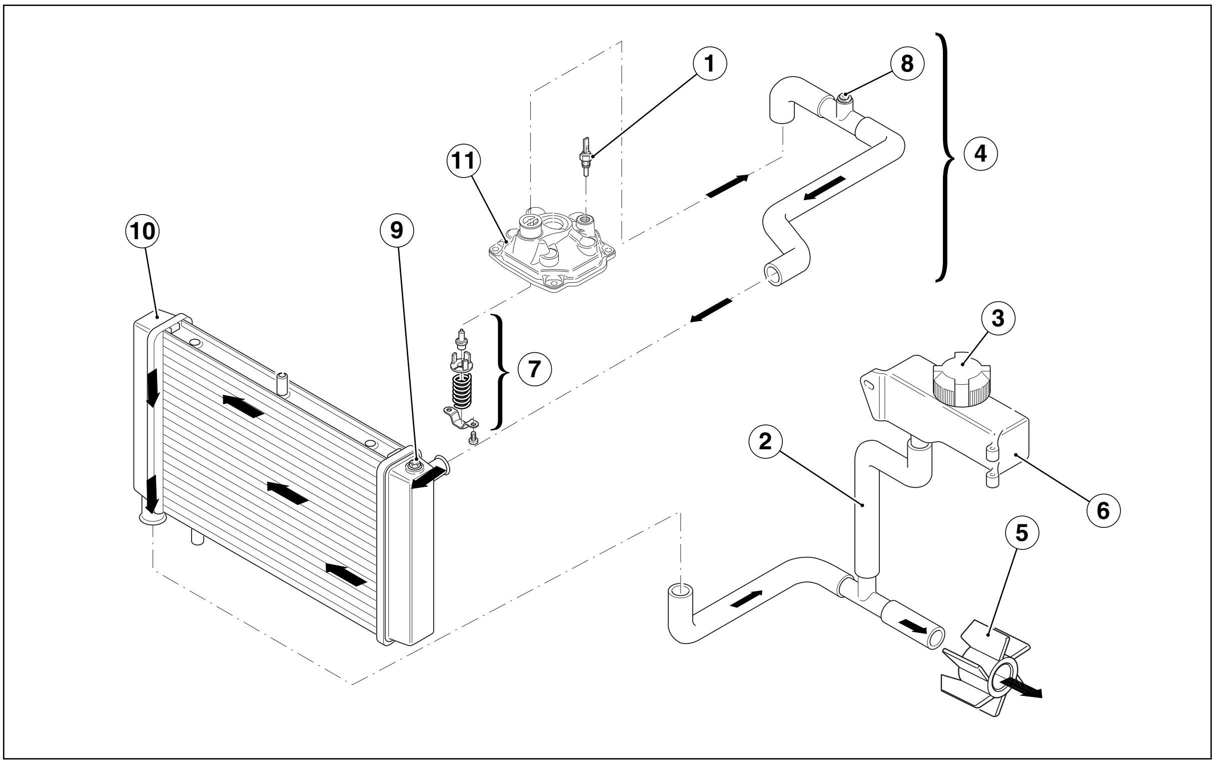
5.1. COOLING SYSTEM DIAGRAM

5.1.1. COOLING SYSTEM DIAGRAM

An engine-driven centrifugal pump accommodated in the engine circulates coolant through the system. The pump takes in the coolant from the bottom section of the radiator and directs it through the ducts into the cylinders and cylinder heads to cool down engine internals.
When coolant expands from heat, the expansion reservoir takes up excess coolant.
"LOW" and "FULL" level marks facilitate coolant level inspection and top-up; see 2.10.1.
See 1.3.1 for more details on coolant.



Key:
1. Cylinder thermistor
2. Expansion reservoir connection tubing
3. Plain radiator cap (no breather)
4. Radiator to thermal expansion valve tube
5. Centrifugal pump (intake)
6. Expansion reservoir
7. 70° thermostat
8. Breather union
9. Radiator breather
10. Radiator
11. Cylinder head cover

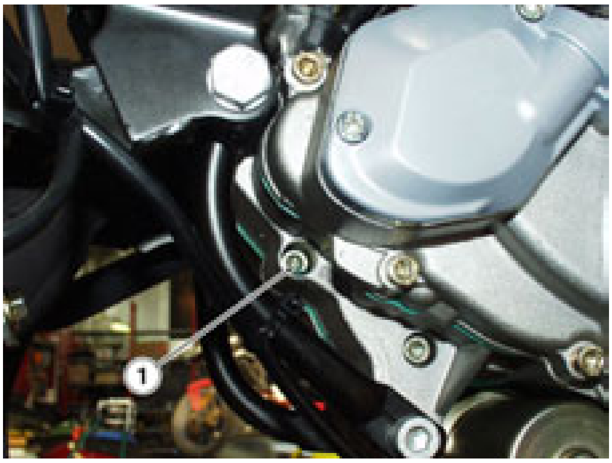
5.2. COOLANT

5.2.1. COOLANT CHANGE

Read ☞ 1.2.1 and ☞ 1.3.1 carefully.

Change coolant every two years.

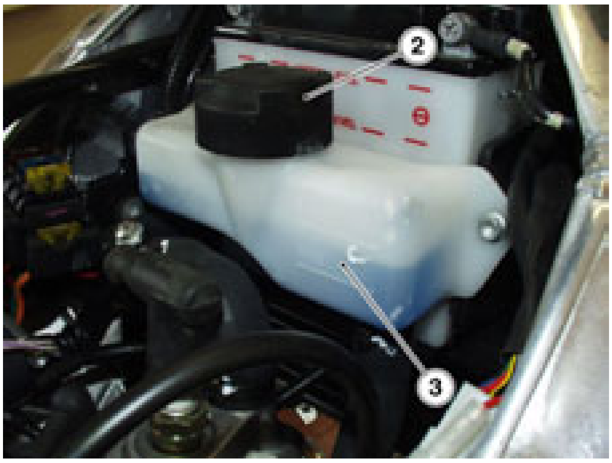
- Remove the left-hand side fairing; see ☞ 7.1.2.
- Lift the fuel tank; see ☞ 2.9.1.
- Place a container with capacity greater than 1 litre under the drain plug (1) to collect coolant.
- Release and remove the drain plug (1).



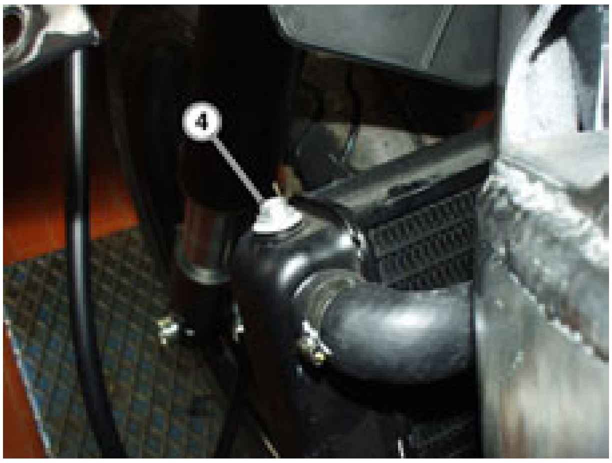
- Remove the cap (2) of the expansion reservoir (3) to facilitate drainage.

DO NOT RELEASE COOLANT INTO THE ENVIRONMENT.

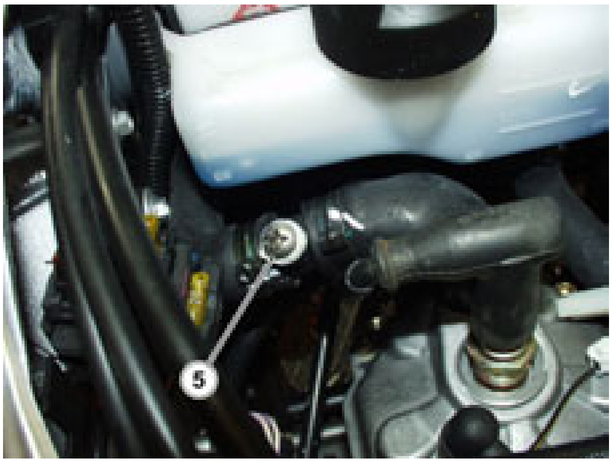
- Refit the drain plug (1).
- Fill the expansion reservoir (3) up to maximum level.



- Slacken the screw (4) on the radiator.
- Wait until coolant drains out and then tighten the screw (4).
- Top up with coolant; see ☞ 2.10.1.



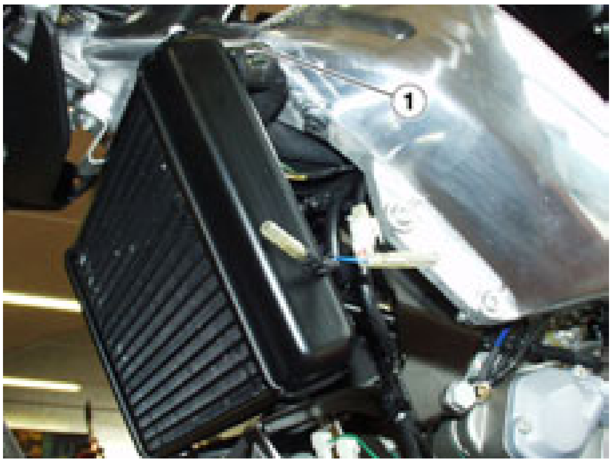
- Slacken the screw (5) on the union.
- Wait until coolant drains out and then tighten the screw (5).
- Top up with coolant again if needed; see ☞ 2.10.1.



5.3. RADIATOR

5.3.1. RADIATOR

Read 1.2.1 and 1.3.1 carefully.

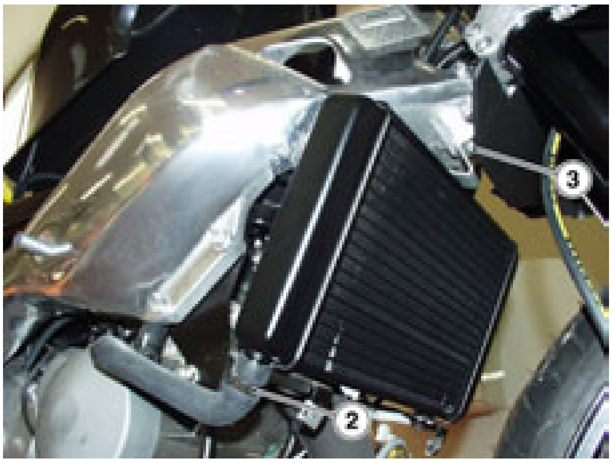


TORQUE WRENCH SETTINGS

Radiator to frame mounting screw (3): 10 Nm (1.0 kgm).

REMOVAL

- Drain all coolant from the cooling circuit; see 5.2.1.
- Remove the right-hand side fairing; see 7.1.2.
- Release the hose clip nipple (1) and withdraw the hose from the radiator.



- Release the hose clip nipple (2) and withdraw the hose from the radiator.
- Release and remove the screw (3).

WARNING
Take care not to damage the radiator fins.

- Tilt the radiator slightly forward while lifting until the two bottom mounting bosses are clear of their holes in the radiator bracket.
- Remove the radiator.

WARNING
Block off the openings of the hoses to prevent the ingress of dirt.

INSTALLATION

WARNING
Remove any build-up, dirt, etc. caught between the radiator fins blowing with compressed air. Straighten any bent fins using a small flat-blade screwdriver. Renew the hoses if cracked or sheared. Before refitting the radiator, wash it inside using clean water only.

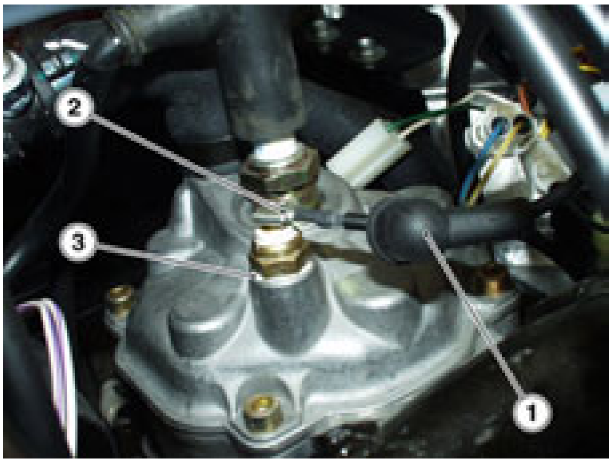
NOTE *Change the grommets mounted on the radiator bracket if damaged.*

- Locate the radiator to the bracket and secure it with the screw (3).
- Connect the pipes to the radiator using two new clips.
- Fill the cooling circuit; see 5.2.1.

5.4. THERMISTOR

5.4.1. COOLANT THERMISTOR

Read ☞ 1.2.1 **and** ☞ 1.3.1 **carefully.**



REMOVAL

- Lift the fuel tank; see ☞ 4.1.1.
- Remove the rubber cover (1).
- Disconnect the electrical connector (2).
- Unscrew and remove the thermistor (3).

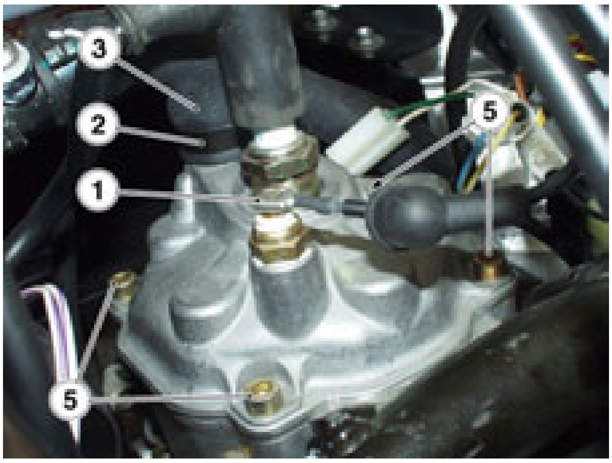
INSTALLATION

- Smear the thread of a new thermistor with LOCTITE® 574.
- Screw the new thermistor (3) finger-tight and then tighten.
- If any coolant has been spilled during the removal procedure, top up to correct level when finished; see ☞ 2.10.1.

5.5. THERMOSTAT

5.5.1. 70° THERMOSTAT

Read 1.2.1 and 1.3.1 carefully.



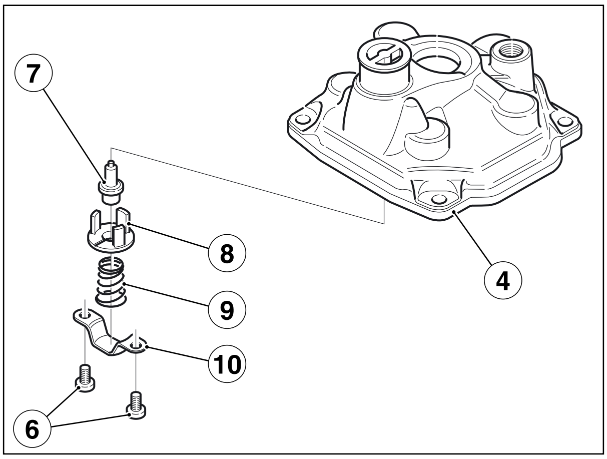
TORQUE WRENCH SETTINGS

Cylinder head cover screws (5):	10 Nm (1.0 kgm)
Thermostat bridge retaining screws (6):	6 Nm (0.6 kgm)

REMOVAL

- Drain all coolant from the cooling circuit; see 5.2.1.
- Remove the spark plug; see 2.6.1.
- Disconnect the electrical connector (1) at the thermistor end.
- Slacken the clip (2).
- Withdraw the hose (3) from the cylinder head cover (4).
- Release and remove the four screws (5).
- Remove the cylinder head cover (4).
- Release and remove the two screws (6).
- Remove the thermostat (7) and collect bridge (10), spring (9) and thermostat mount (8).

WARNING
Block off the openings to prevent the ingress of dirt.



INSTALLATION

- Fit – in the order - thermostat (7), thermostat mount (8), spring (9) and thermostat bridge (10) into the cylinder head cover (4).
- Tighten the two screws (6).
- Refit the cylinder head cover (4).
- Tighten the four screws (5).

***NOTE** Be sure to have the special clip tweezers (no. 0277295) ready at hand and renew all clips using the same type fitted originally.*

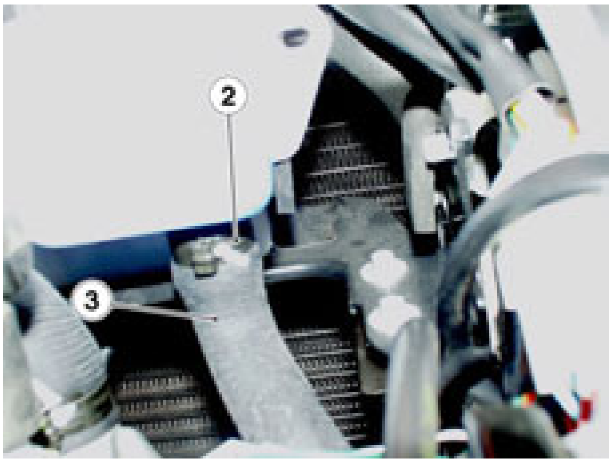
- Refit the hose (3) into the cylinder head cover (4).
- Refit the spark plug.
- Connect the connector (1) to the thermistor.
- Fill the cooling circuit; see 5.2.1.

5.6. EXPANSION RESERVOIR

5.6.1. EXPANSION RESERVOIR

TORQUE WRENCH SETTINGS

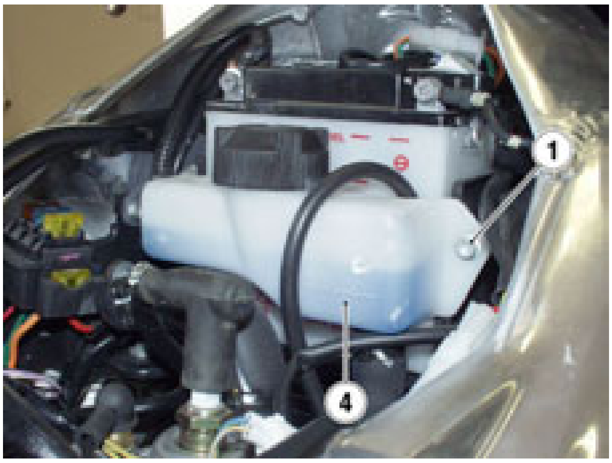
Expansion reservoir retaining screw (1) 3 Nm (0.3 kgm).



REMOVAL

- Drain the cooling circuit; see 5.2.1.
- Release and remove the screw (1).
- Remove the clip (2).
- Disconnect the tube (3) from the expansion reservoir (4).
- Remove the expansion reservoir (4).

WARNING
Store the expansion reservoir (4) in a safe place.



INSTALLATION

- Position the expansion reservoir (4).

NOTE *Be sure to have the special clip tweezers (no. 0277295) ready at hand and renew all clips using the same type fitted originally.*

- Refit the tube (3) to the expansion reservoir (4).
- Tighten the screw (1).
- Fill the cooling circuit; see 5.2.1.

ENGINE

6

SUMMARY

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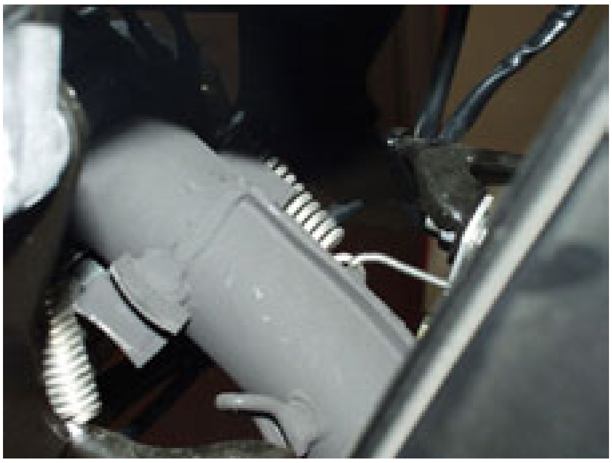
6.1. EXHAUST SYSTEM

6.1.1. EXHAUST PIPE REMOVAL

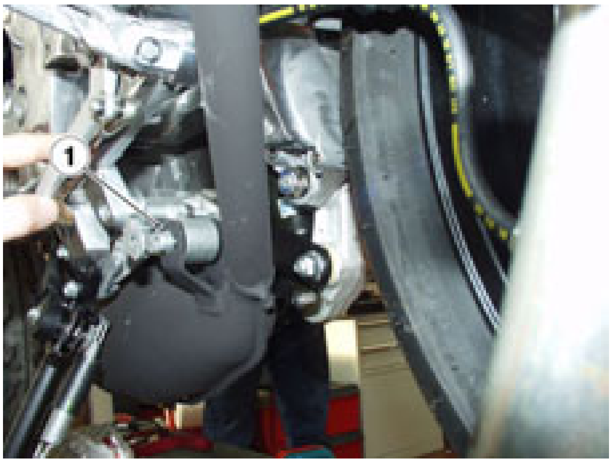
TORQUE WRENCH SETTINGS

Screws (1-2)	22 Nm (2.2 Kgm)
Screw (3)	20 Nm (2.0 Kgm)

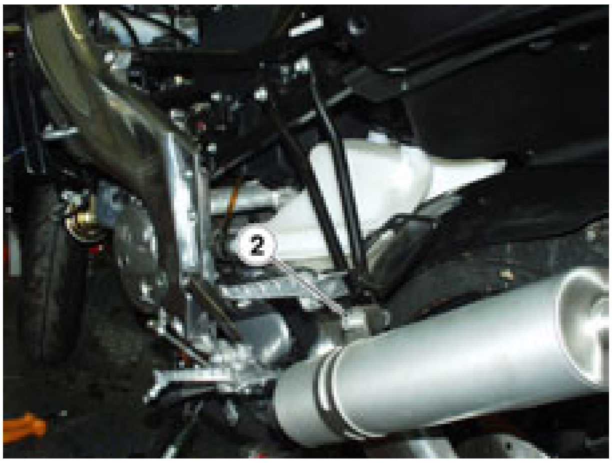
- Remove both side fairings; see 7.1.2.
- Remove the fairing air dam; see 7.1.3.
- Unhook the two springs from the exhaust flange on the cylinder.



- Release and remove the screw (1) and collect the two washers and the nut.



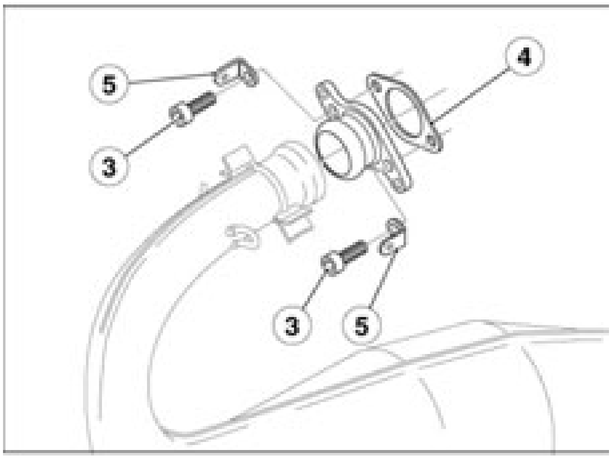
- Release and remove the screw (2) on the left-hand passenger footpeg bracket and collect the washer and the nut.
- Remove the exhaust pipe together with its clamp.



If needed, remove the exhaust flange as follows:

- Release and remove the two screws (3) and collect the lap plate.
- Remove the exhaust flange and collect the seal (4).

WARNING
On refitting, use a new exhaust flange seal (4) and check that the mounting brackets (5) are correctly positioned.



6.2. ENGINE

6.2.1. GENERAL INFORMATION

Type	**2-stroke single-cylinder engine with intake reed valve.** **Separate lubrication with variable-rate automatic mixer (1.0 – 3.0%).**
Cylinders	1
Total displacement	124.82 cu cm
Bore/stroke	54 mm / 54.5 mm
Compression ratio	12.5 ± 0.5 : 1
Starter	electric
Engine idling speed (rpm)	1250 ± 100 rpm
Clutch	Wet multi-plate clutch operated by manual control on left handlebar
Cooling	liquid cooling
Gearbox	6-speed mechanical transmission with control pedal on left side of engine
Carburetor	DELL’ORTO PHBH 28
Ignition	CDI
Spark advance	12° ± 2° at 2000 rpm

6.2.2. ENGINE COMPONENTS THAT CAN BE REMOVED WITH THE ENGINE INSTALLED IN THE FRAME

The parts listed below can be removed leaving the engine in the frame.

LEFT SIDE OF ENGINE

- Clutch cover
- Mixing pump
- Coolant pump
- Balancing shaft gear
- Kick-starter (where fitted)
- Clutch

CENTRAL AREA OF ENGINE

- Carburetor
- Radiator
- Exhaust pipe
- Cylinder head
- Piston
- “RAVE” valve (fitted to “f.p.” models only)
- Reed valve
- Starter motor (low in the centre)

RIGHT SIDE OF ENGINE

- Drive chain and front chain sprocket
- Ignition flywheel
- Pick-up
- Starter gear

6.2.3. ENGINE REMOVAL

Read 1.2.1 carefully.

TORQUE WRENCH SETTINGS

Bolt (1)	10 Nm (1.0 kgm)
Sprocket cover screws (3)	5 Nm (0.5 kgm)
Engine rear mounting bolt (11)	22 Nm (2.2 kgm)
Engine front mounting nut (12)	50 Nm (5.0 kgm)
Front upper nut (13)	50 Nm (5.0 kgm).

WARNING
The engine is removed by lowering it from the frame. Make sure to have all necessary equipment ready at hand and in place before proceeding.

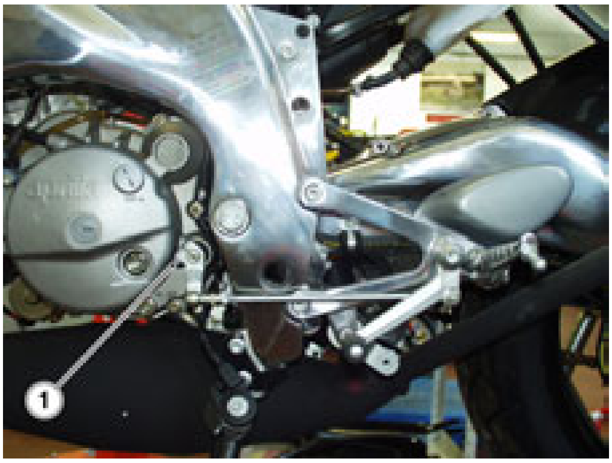
Before taking the engine out of the frame, clean it with a steam cleaner and drain all coolant; see 5.2.1.

NOTE *Certain procedures include cross-references to relevant sections of the manual. Some of the operations described there may not be strictly required for the job at hand. Proceed sensibly to avoid redundant work, that is, always make sure you really need to remove a particular component before proceeding.*

Engine removal procedures are listed in the proper sequence in this section.

NOTE *You will need a hoist and suitable slings to lift the engine.*

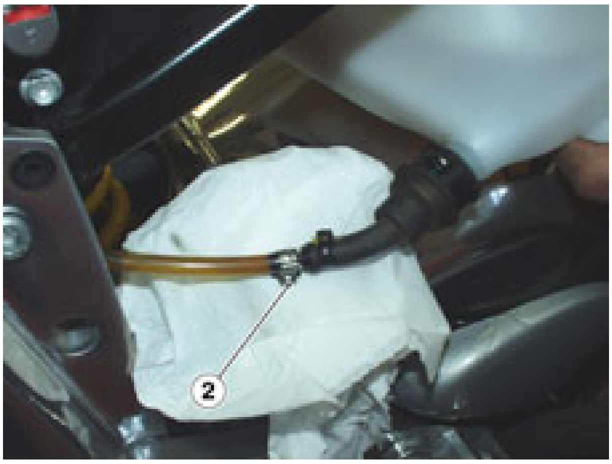
- Put the motorcycle on front wheel stand (OPT); see 1.7.1.
- Fix the slings to the rider footpegs.
- Lift the hoist arm until stretching the slings taut.
- Remove the exhaust system; see 6.1.1
- Remove the carburetor and leave it connected to throttle and cold-start cables; see 4.3.1.
- Remove the radiator; see 5.3.1
- Slacken the screw (1) and withdraw the gearbox link rod. The link rod is retained to the gear shift lever by the rod.



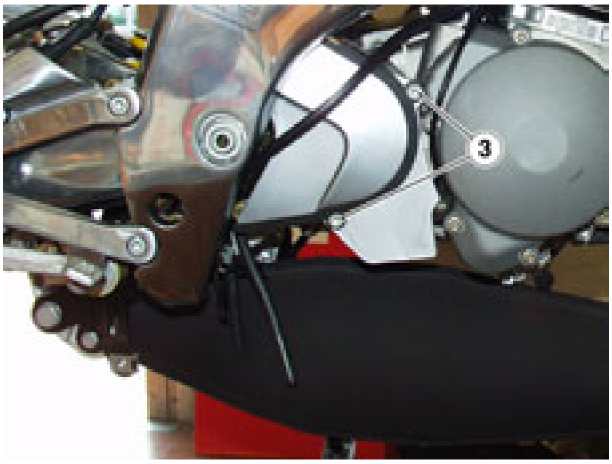
- Release the tie (2).

NOTE *Place some paper under the fitting to collect any oil spillage.*

- Disconnect the oil tubes and block them off.
- Disconnect the throttle cable at the mixture oil pump end; see 7.3.2.
- Perform the first five steps of the procedure described at paragraph 5.5.1
- Disconnect the clutch cable at the engine end only; see 7.3.4.
- Remove the battery and battery box mount together; see 7.2.1.



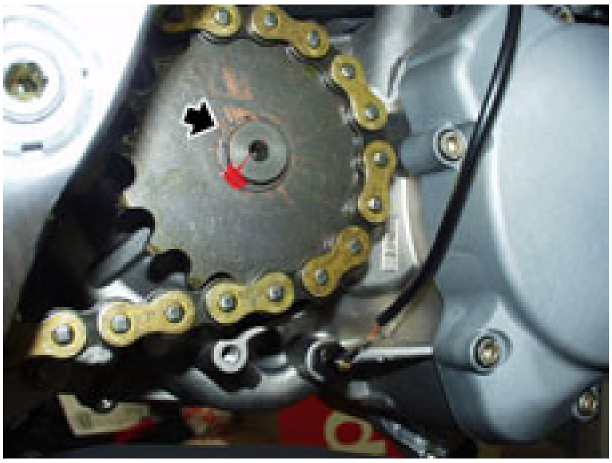
- Release and remove the two screws (3) and remove the sprocket cover.



- Remove the circlip.

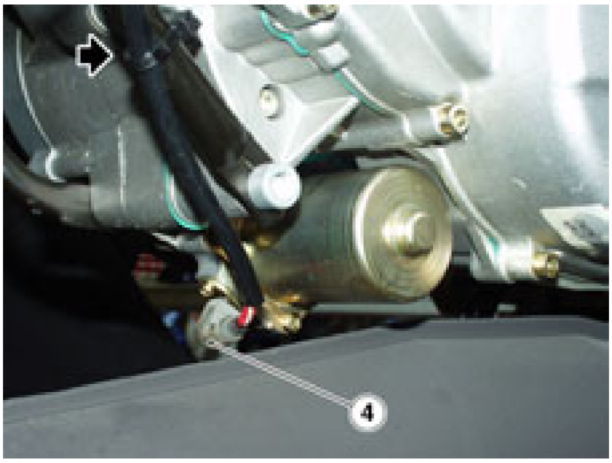
NOTE *Slacken the drive chain to aid removal of the chain sprocket.*

- Slide the chain sprocket and the drive chain off the shaft.

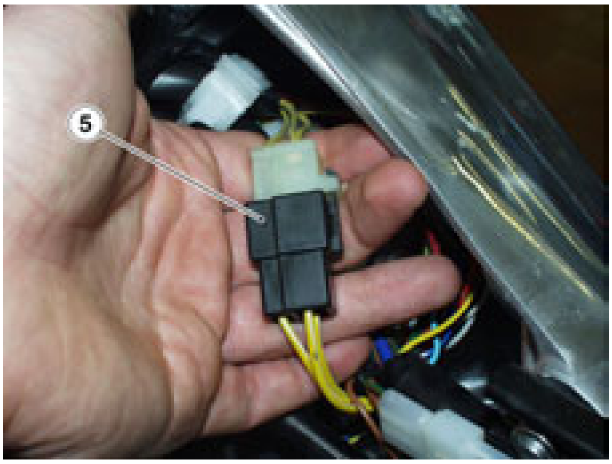


- Disconnect the following electrical connectors in the order:

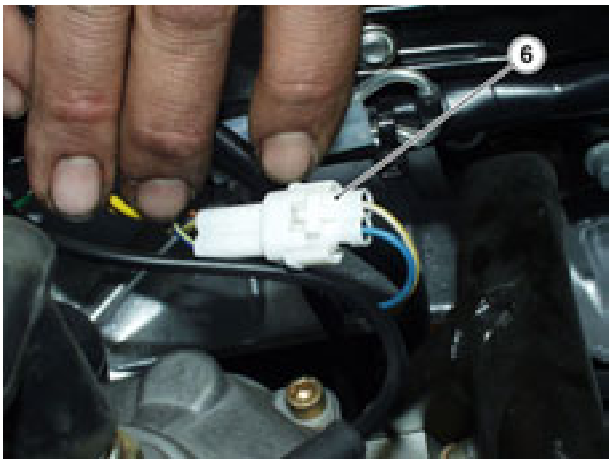
- Starter motor (4) – release the wiring from the ties.



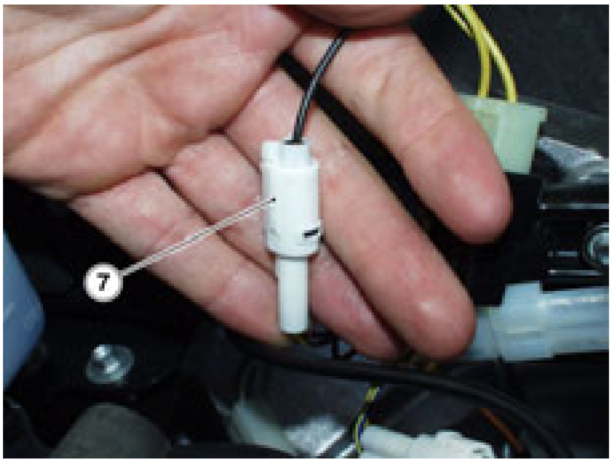
- Generator (5)



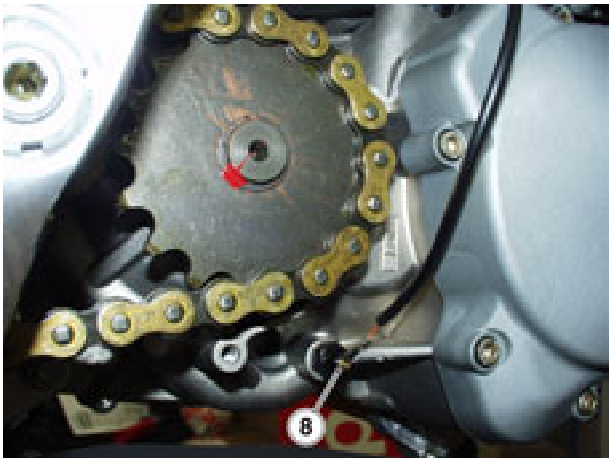
- Pick-up (6).



- ECU ground (7).

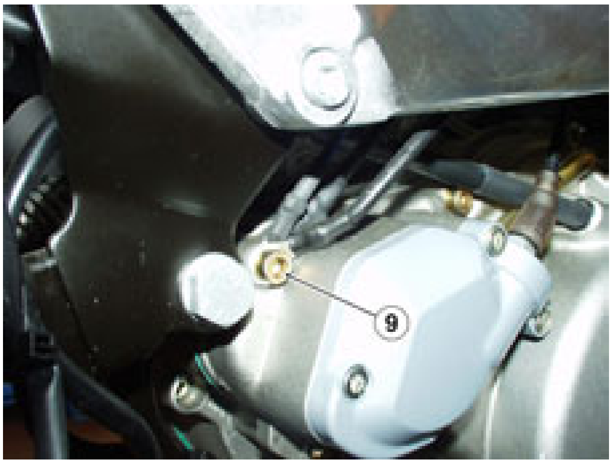


- Neutral light switch (8).



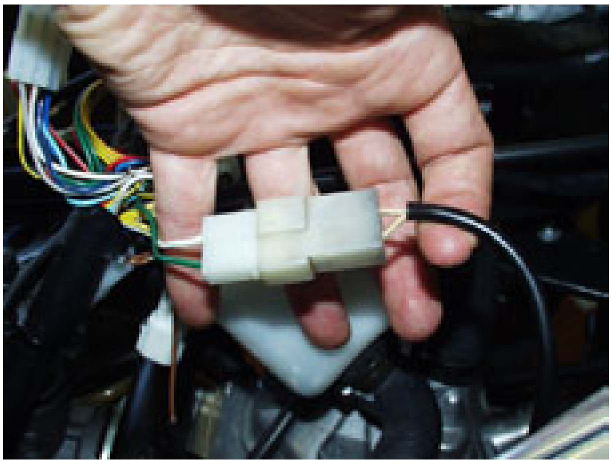
- Release and remove the screw (9) and disconnect the grounding connectors of the system.
- Partially remove the swinging arm spindle; see 7.11.1.

NOTE *You need not remove the swinging arm completely.*



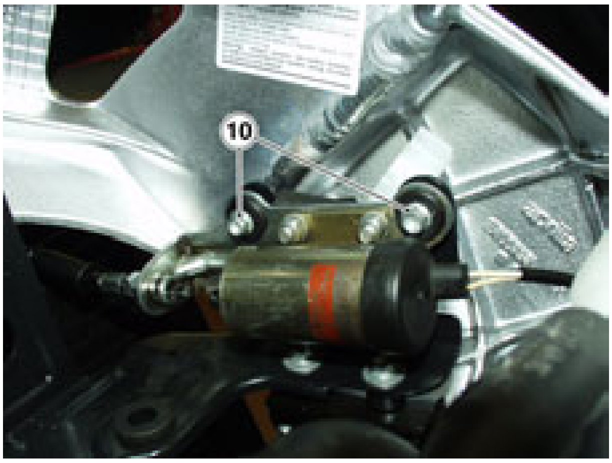
When you are removing the engine of a full-power (f.p.) vehicle:

- Disconnect the RAVE valve connector.

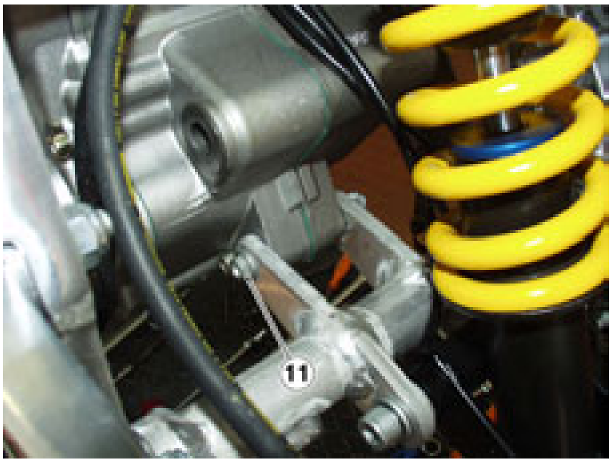


- Release and remove the two screws (10).

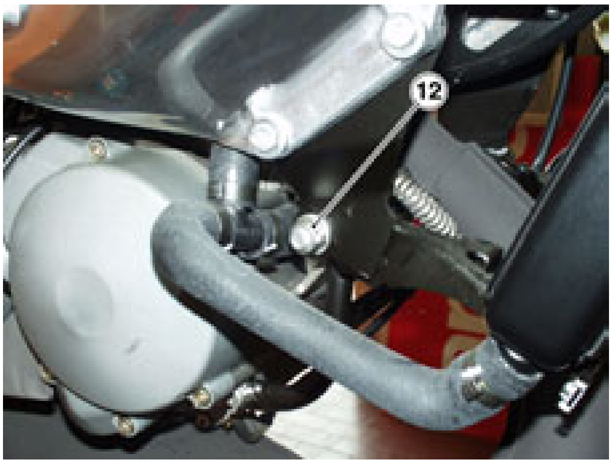
NOTE *Release all cables and hoses from the ties and clips along their full length.*



- Release and remove the rear lower mounting bolt (11) and collect nut and washer.



- Undo and remove the nut (12) working from the right side of the motorcycle and collect the washer.
- Remove the bolt from the opposite side.

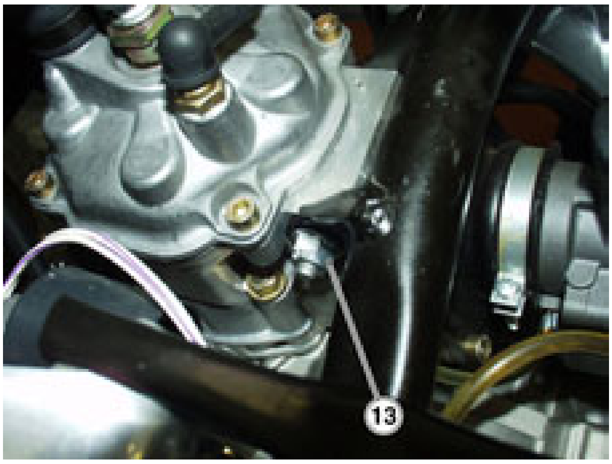


WARNING
The engine is heavy and you will need an assistant to help during the next steps of the procedure. Plan work ahead together.

- Undo and remove the nut (13) and collect the washer.

DANGER
The engine is retained to the frame by the upper mounting bolt only.
Use great care and be careful of your fingers and limbs.
Choose the location where you will place the engine and clear the floor area from any tools.

- Support the engine and remove the bolt.
- Lower the engine until placing it safely on the floor.



6.2.4. INSTALLING THE ENGINE INTO THE FRAME

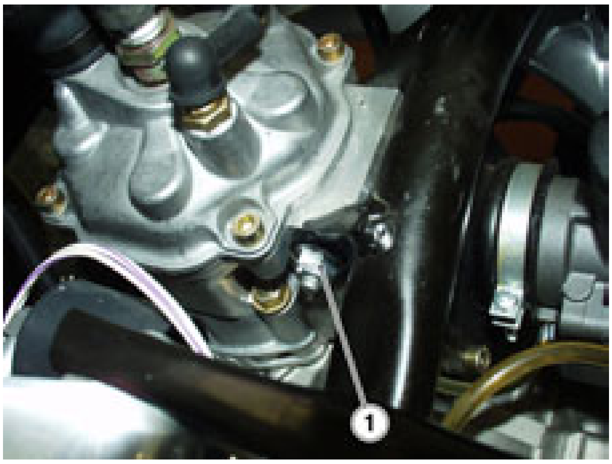
Read 1.2.1 carefully.

TORQUE WRENCH SETTINGS

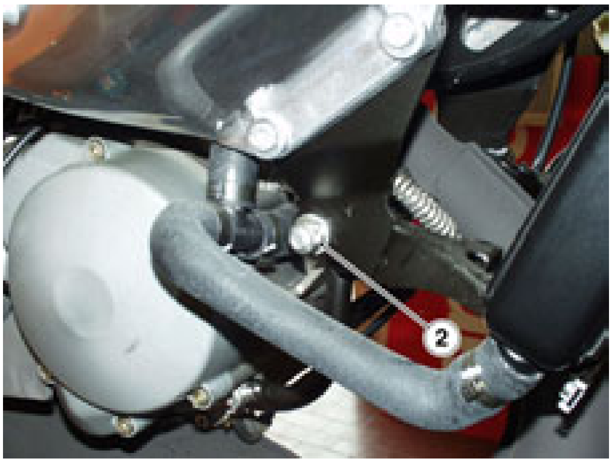
Top engine nut (1)	50 Nm (5.0 kgm)
Front engine nut (2)	50 Nm (5.0 kgm)
Rear engine bolt (3)	22 Nm (2.2 kgm)
Sprocket cover screws (10)	5 Nm (0.5 kgm)
Screw (13)	10 Nm (1.0 kgm)

CAUTION
Handle the engine with care and be careful of your finger and limbs.

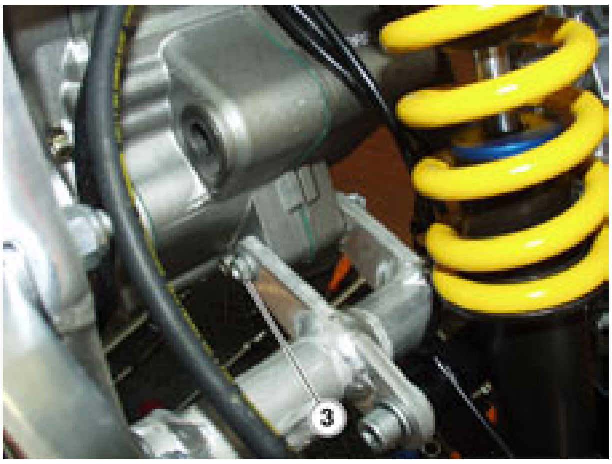
- Shift the engine in small motions until matching the mounting holes perfectly.
- Insert the top mounting bolt with the washer and tighten the nut (1).



- Insert the front mounting bolt, fit the washer and tighten the nut (2).

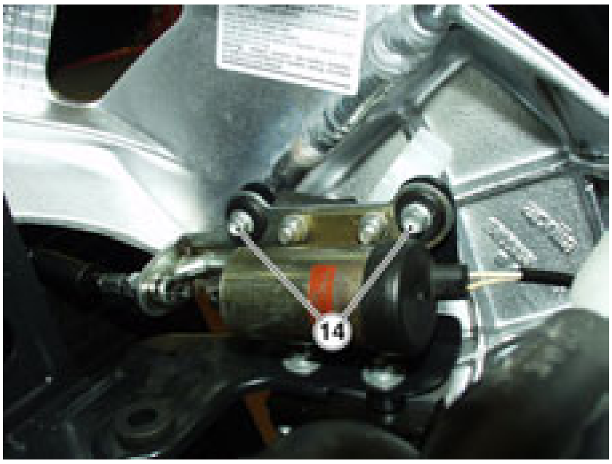


- Insert the rear mounting bolt (3), fit the washer and tighten the nut.

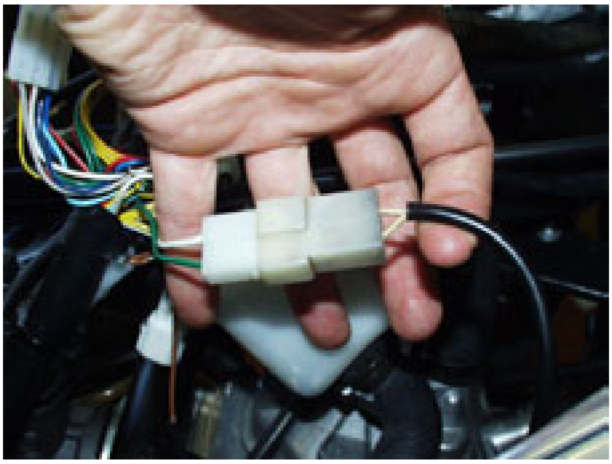


NOTE *The next two operations are only required on full-power (f.p.) engines:*

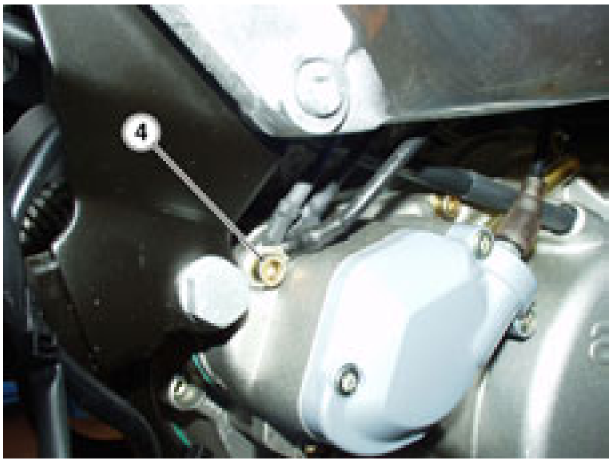
- Secure the RAVE valve by the two screws (14).



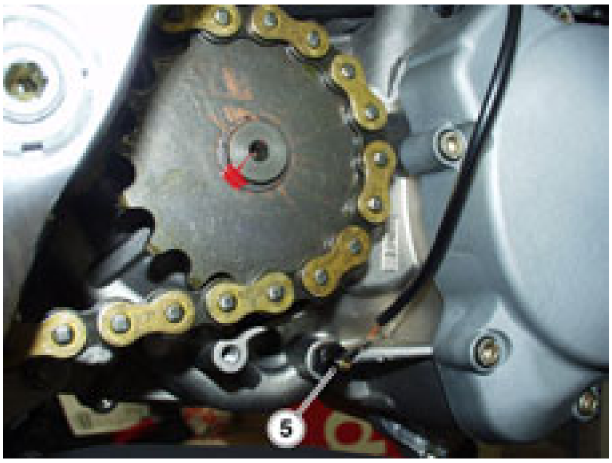
- Connect the RAVE valve connector.
- Refit the swinging arm spindle; see ☞ 7.11.5.



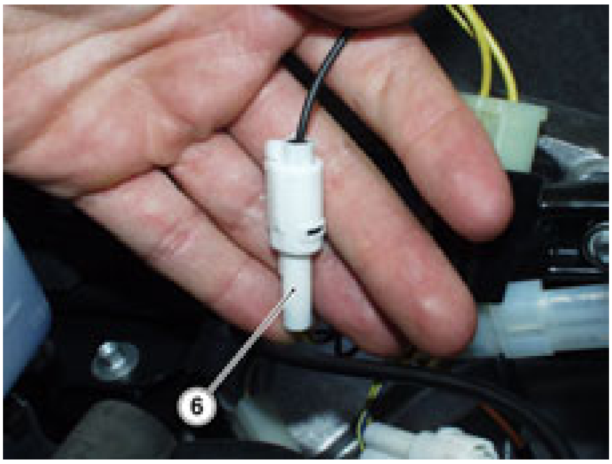
- Connect the following electrical connectors in the order:
  - System grounding connectors; fix them with the screw (4).



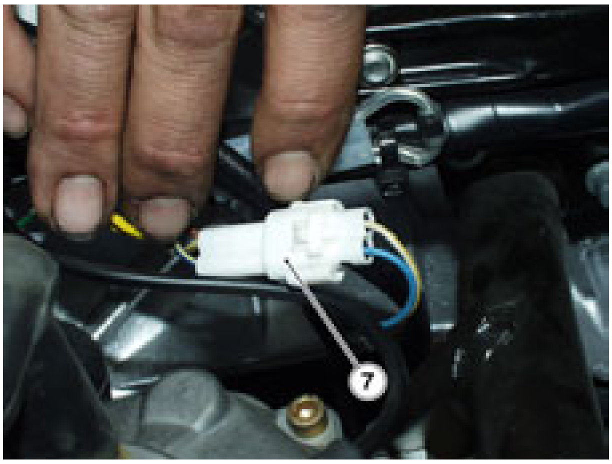
  - Neutral light switch (5).



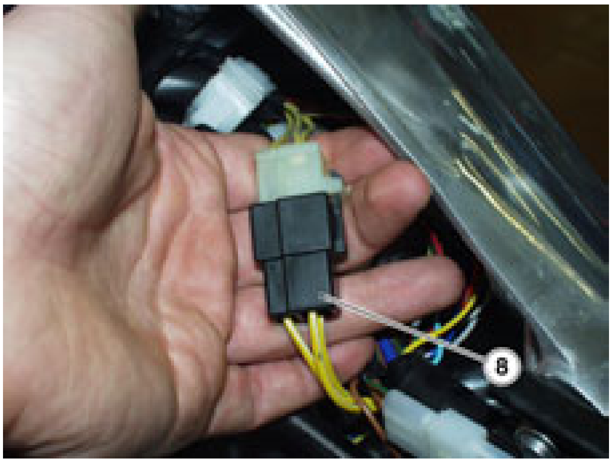
- ECU ground (6).



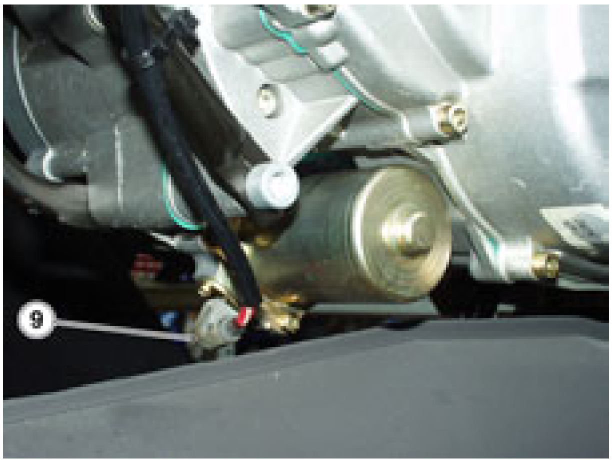
- Pick-up (7).



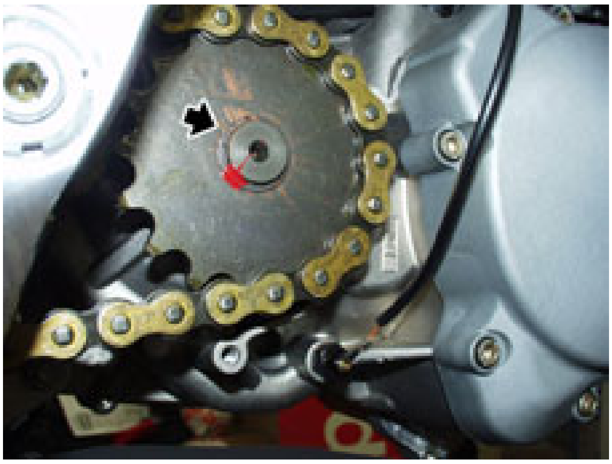
- Generator (8).



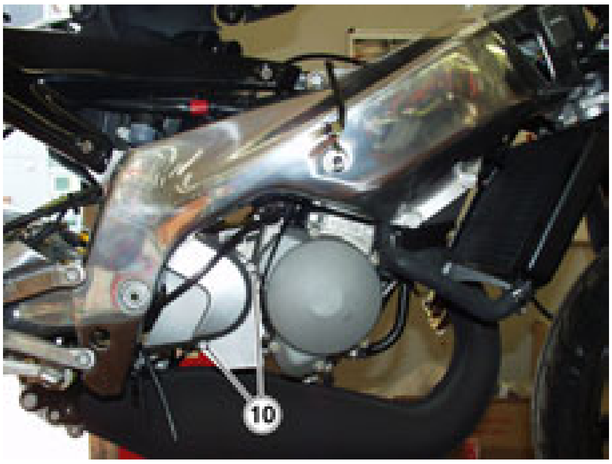
- Starter motor (9).



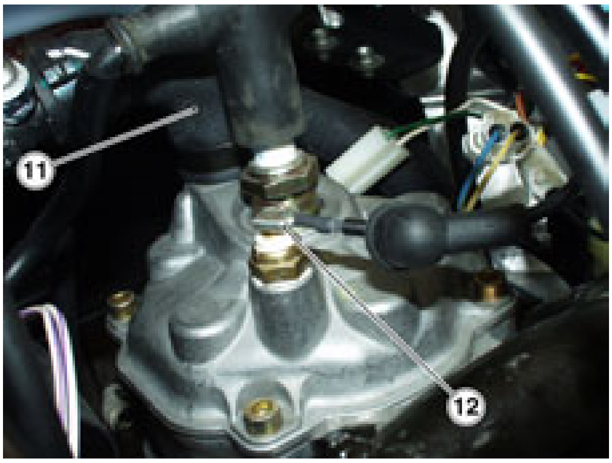
- Fit the front chain sprocket to the shaft together with the drive chain.
- Fit the circlip.



- Position the sprocket cover and secure it with the two screws (10).
- Connect the throttle cable to the mixer oil pump; see ☞ 7.3.2.



- Fit the hose (11) to the cylinder head cover and fix it with a new clip.
- Refit the spark plug and connect the cap correctly.
- Connect the electrical connector (12) at the thermistor end.
- Connect the clutch cable at the engine end; see ☞ 7.3.4
- Install the battery and connect it to the system; see ☞ 7.2.1.

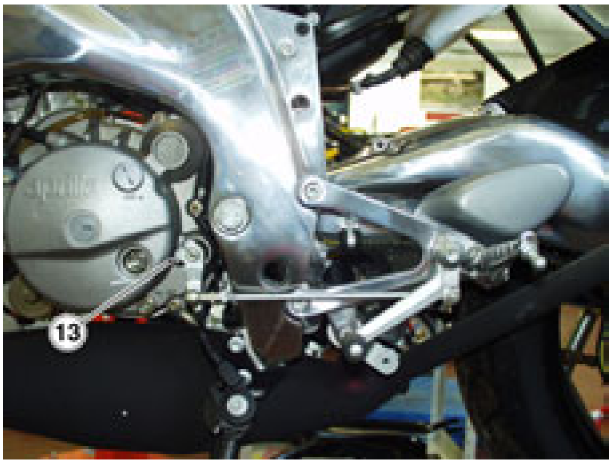


- Connect the oil tubes using a new clip.

- Position the gearbox link rod and tighten the screw (13).
- Install the exhaust system; see ☞ 6.1.1 Install the carburetor; see ☞ 4.3.1.
- Install the radiator; see ☞ 5.3.1.

When finished with engine installation, go on to the next operations.

- Check that all engine mounting bolts and nuts are at the correct torque.
- Top up coolant level; see ☞ 2.10.1
- Check drive chain slack and adjust as required; see ☞ 2.21.3.



***NOTE** Inspect any components you have disturbed and check that:*

- electrical leads are secured correctly with the suitable ties;

⚠ **WARNING**
The leads should not be twisted or trapped under any components.

- electrical connectors are connected to the matching connectors;
- hoses and hose couplings are inserted correctly and fixed with suitable clips;
- throttle and cold-start cables slide freely and do not bind when you turn the handlebar.

6.3. RAVE

6.3.1. RAVE VALVE SPECIFICATIONS

The RAVE exhaust valve is operated by a solenoid via a Bowden cable.
The engine control unit operates the solenoid within a predetermined range of engine rpm. The ECU uses primary circuit frequency to calculate engine rpm.

***NOTE** The RAVE exhaust valve has been designed for racing and motorcycles equipped with it are not street-legal in some countries.*

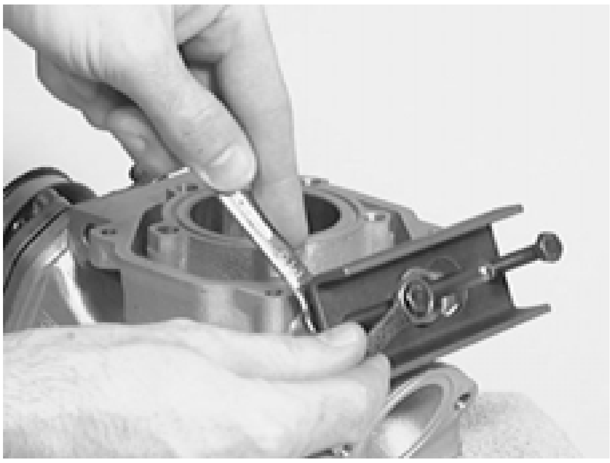
"RAVE" valve operation

- The RAVE exhaust valve opens between 500 and 2500 rpm to allow for valve stem self-cleaning.
- It closes between 2550 rpm and operation point (about 8000 rpm, depending on engine version).
- Above the operation point, the valve stays open.

RAVE valve operation points:
Strada...............................8000 - 8100 rpm.
Sport Pro...........................8300 - 8400 rpm.

6.3.2. SPECIAL TOOLS

Exhaust valve extractor : ROTAX part no. 277 445



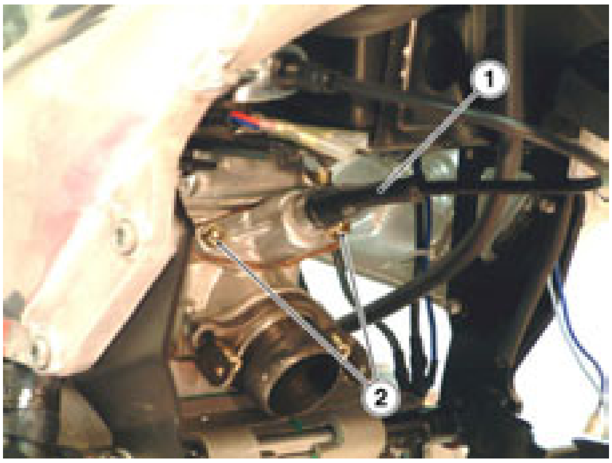
6.3.3. (RAVE) EXHAUST VALVE REMOVAL

Read 1.2.1 carefully.

TORQUE WRENCH SETTINGS

RAVE valve screws (2) 10 Nm (1.0 kgm)

- Remove the fuel tank; see 4.1.1.
- Remove the battery and battery box mount; see 7.2.1.



PARTIAL REMOVAL

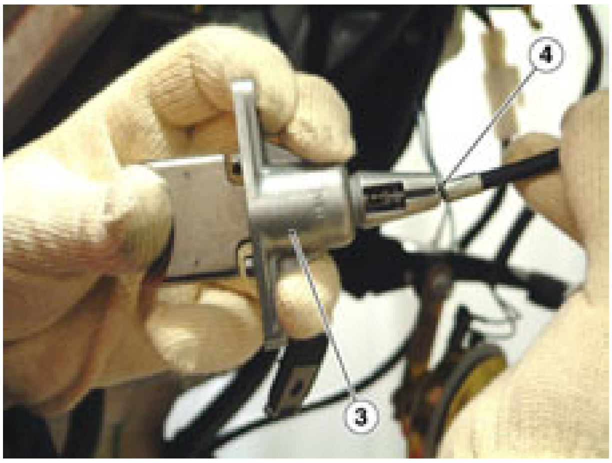
- Slip off the dust cover (1).
- Release and remove both screws (2) and collect the locking washers.

If the valve moves freely:

- Extract the exhaust valve assembly together with the Bowden cable.
- Rotate the valve stem housing (3) through 180° and disconnect the Bowden cable (4).

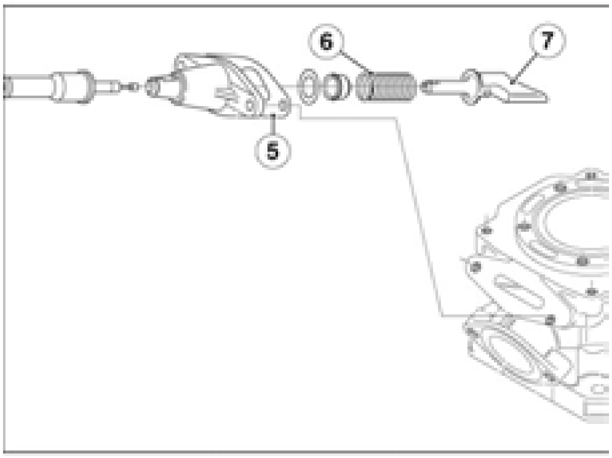
If the valve is locked in the open position (because of combustion residue):

- Push back the valve stem housing (3) using a screwdriver.



WARNING
Push gently or the sealing surface will damage.

- Rotate the valve stem housing (3) through 180° and disconnect the Bowden cable (4).

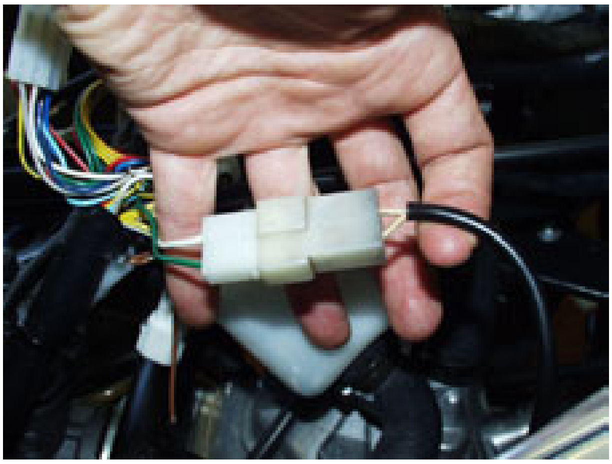


- Remove the valve stem housing (3) and collect spring (6) and seal (5).
- Remove the exhaust valve (7) using the valve extractor; see 6.3.2.

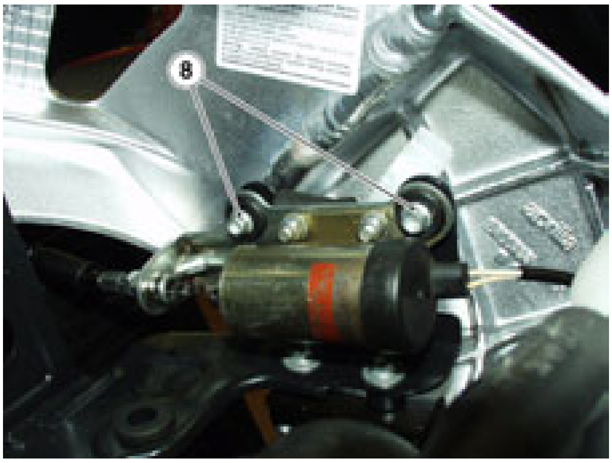
COMPLETE REMOVAL

- Release and remove both screws of the RAVE valve and collect the locking washers.
- Extract the exhaust valve assembly from the cylinder.

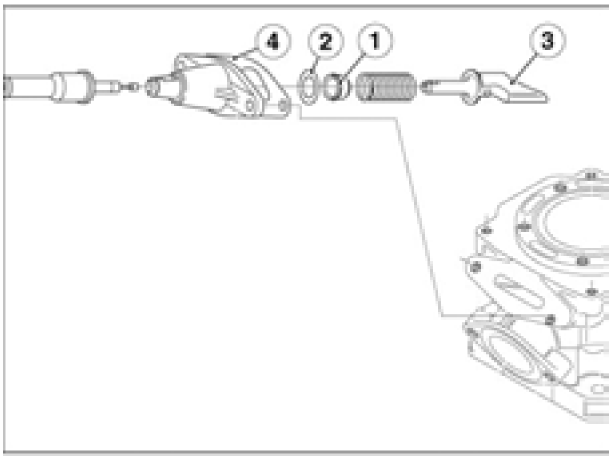
- Disconnect the control unit connector at the wiring harness end.



- Release and remove both screws (8) from the battery bracket.
- Remove the complete RAVE valve.



6.3.4. COMPONENT INSPECTION



SEALS

- Check the valve stem seal (1) and the O-ring (2) (located inside the valve housing) for wear or damage.

EXHAUST VALVE

- Remove any combustion residue from the exhaust valve (3) and the valve duct in the cylinder.
- Check the valve for wear or damage.

CYLINDER GASKET

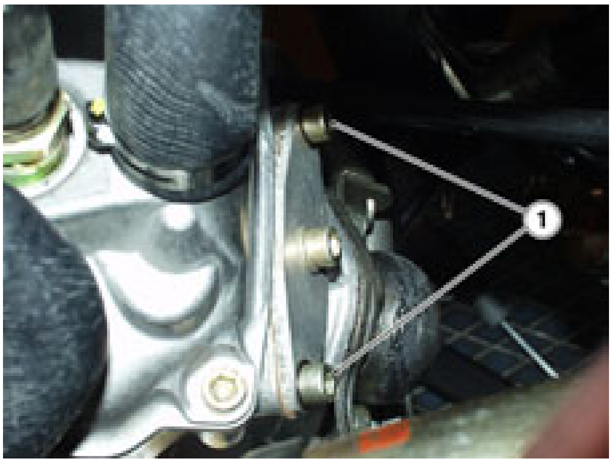
- Change the cylinder gasket (4) on assembly.

SOLENOID

- See ☞ 8.11.1 for control unit inspection.

6.3.5. (RAVE) EXHAUST VALVE INSTALLATION

Read 1.2.1 carefully.

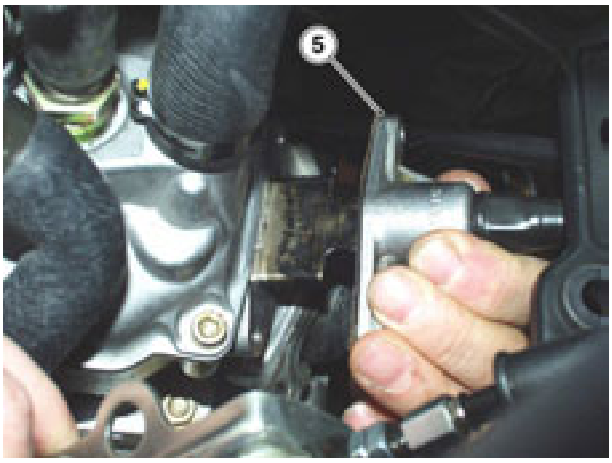


TORQUE WRENCH SETTINGS

RAVE valve screws (1) 10 Nm (1.0 kgm)

- Remove the fuel tank; see 4.1.1.
- Remove the battery together with the battery box mount; see 7.2.1.
- When installing a RAVE valve to a derated engine, first remove the fixed slide. This is done by unscrewing the two screws (1). Collect the washers.

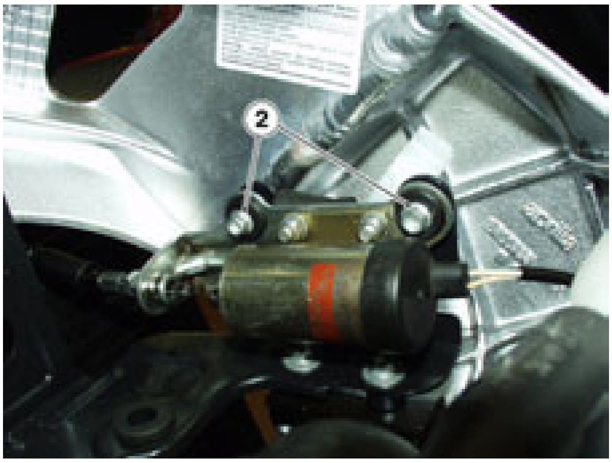
COMPLETE VALVE INSTALLATION



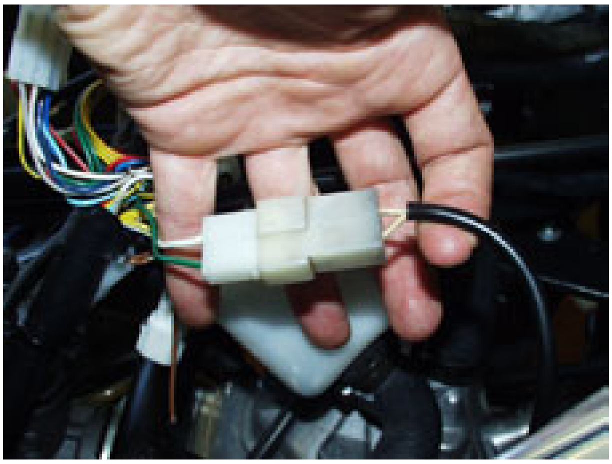
- Insert the exhaust valve assembly complete with seal (5) into the cylinder.

***NOTE** Change the seal (5) on assembly.*

- Use the two screws (1) with washers of the fixed slide to secure the exhaust valve assembly.



- Fit the control unit to the battery bracket using the two screws (2).



- Connect the control unit connector to the wiring harness.

INSTALLATION AFTER PARTIAL REMOVAL

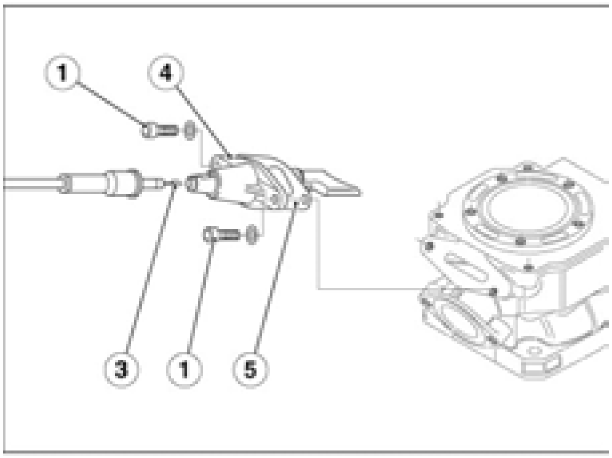
- Connect the Bowden cable (3) to the valve stem housing (4).
- Rotate the valve stem housing (4) through 180°.

NOTE *The cable anchor point must be pointing downwards.*

- Refit the dust cover.
- Insert the exhaust valve assembly complete with seal (5) into the cylinder.

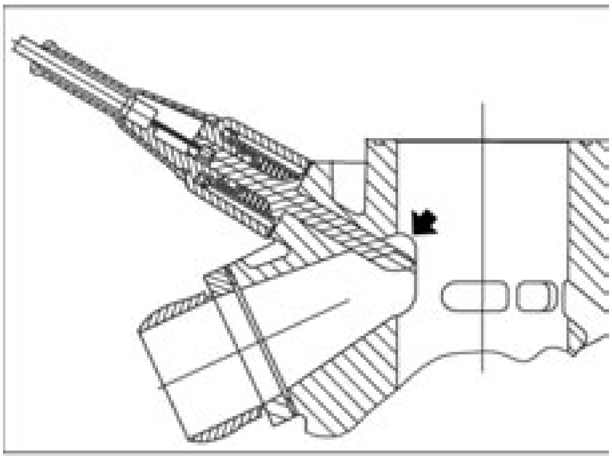
NOTE *Change the seal (5) on assembly.*

- Tighten the two screws (1) with washers of the exhaust valve assembly.



WARNING
Check the exhaust valve assembly as follows after installation.

- With the valve fully open, the valve stem must be flush with the exhaust port. This inspection must be done with the exhaust flange removed; see 6.1.1;
- Make sure the exhaust valve moves freely.



CHASSIS 7

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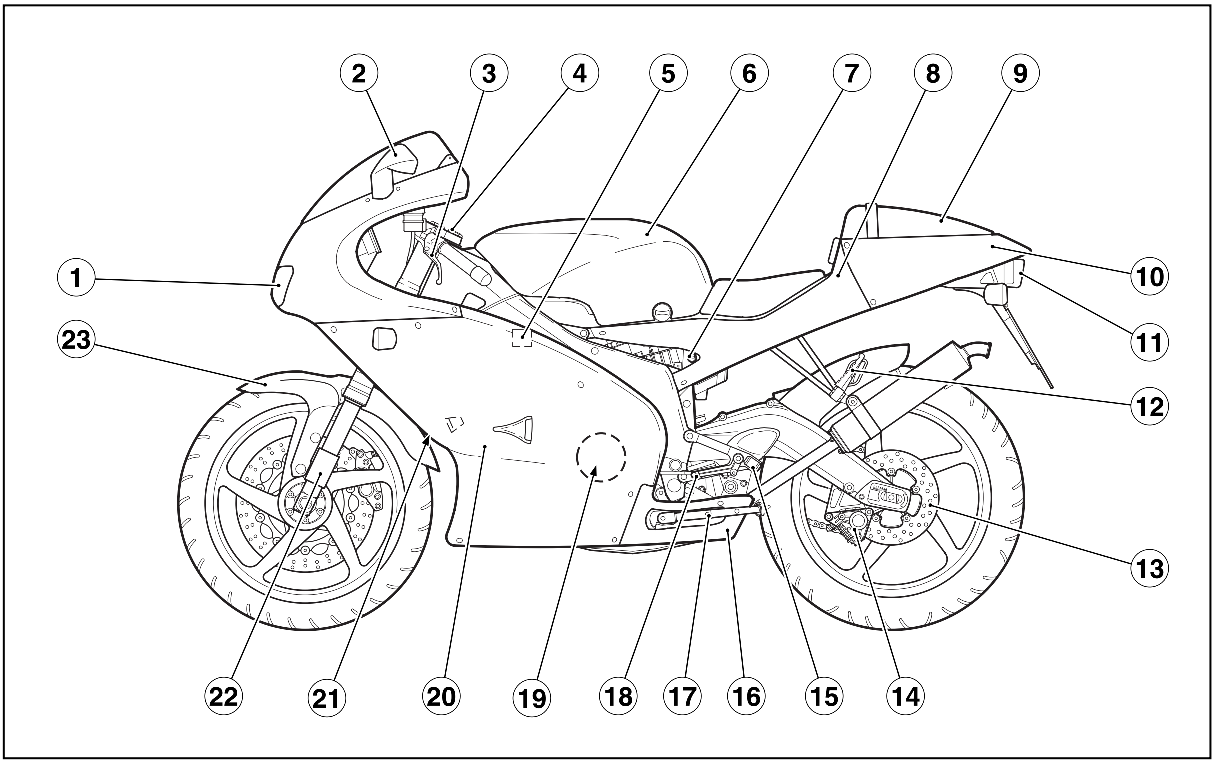
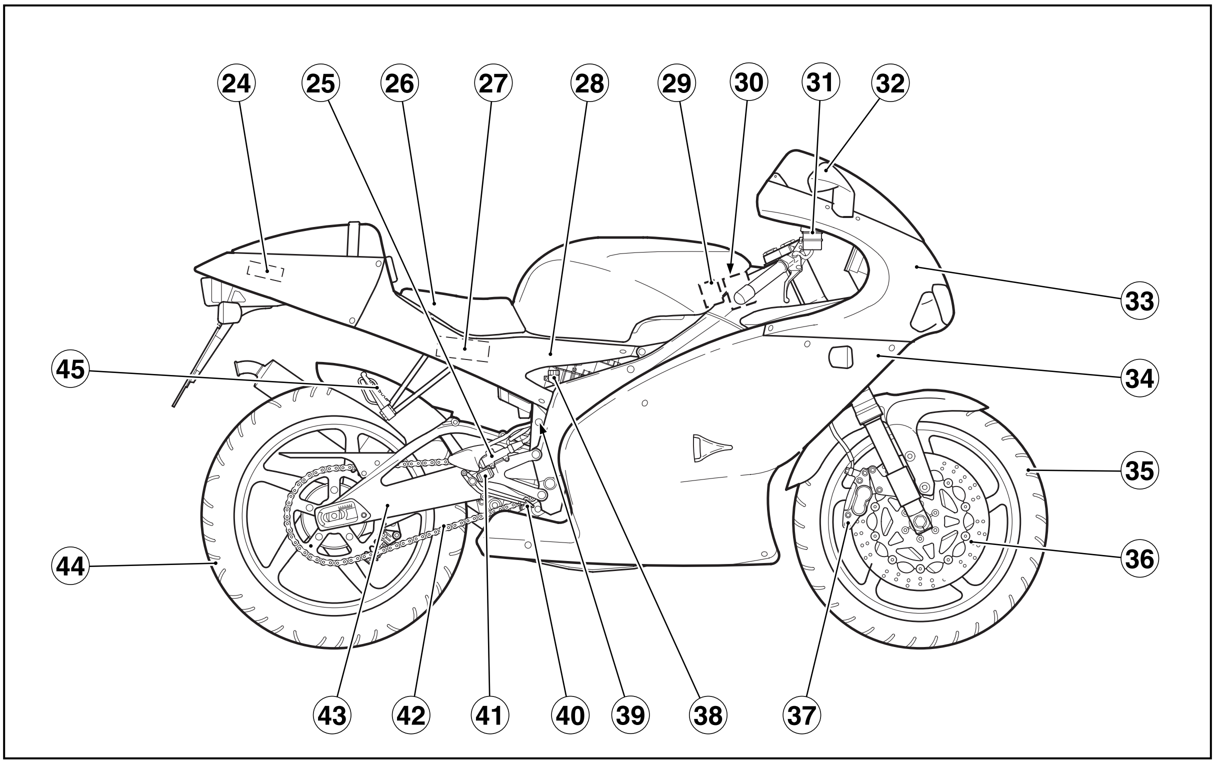
7.1. CHASSIS

7.1.1. CHASSIS



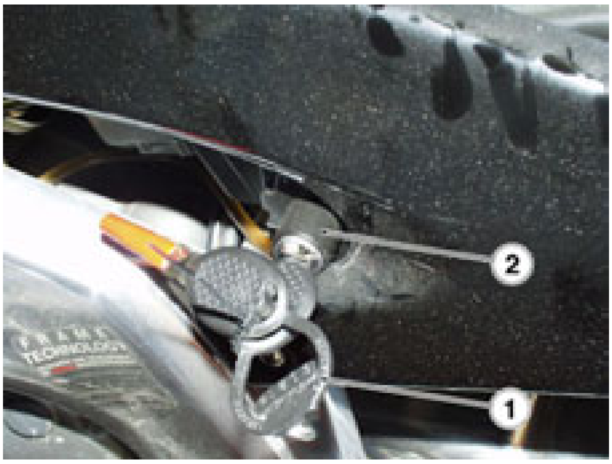
1. Headlight
2. Left rearview mirror
3. Clutch control
4. Ignition switch / steering lock / parking lights
5. Fuse carrier
6. Fuel tank
7. Seat lock
8. Left-hand seat subframe cover
9. Passenger seat
10. Tail section
11. Tail light
12. Left-hand passenger footpeg (spring-loaded, snaps open/closed)
13. Rear brake disc
14. Rear brake caliper
15. Left-hand rider footpeg
16. Left fairing cover
17. Side stand
18. Gear shift lever
19. Gearbox oil sight glass
20. Left body panel
21. Warning horn
22. Front fork
23. Front mudguard



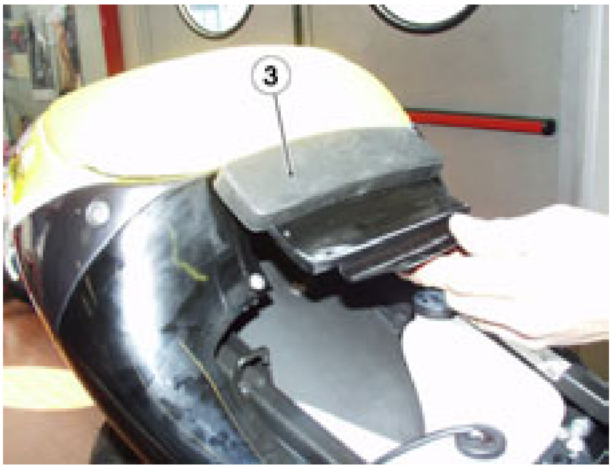
24. Engine Control Unit
25. Rear brake master cylinder
26. Rider seat
27. Air cleaner
28. Right-hand seat subframe cover
29. Coolant expansion reservoir
30. Battery
31. Front brake fluid reservoir
32. Right rearview mirror
33. Front fairing
34. Right body panel
35. Front wheel
36. Front brake disc
37. Front brake caliper
38. Rear brake fluid reservoir
39. Rear shock absorber
40. Rear brake lever
41. Right rider footpeg
42. Drive chain
43. Rear swinging arm
44. Rear wheel
45. Right passenger footpeg (spring-loaded, snaps open/closed)

7.1.2. RIDER SEAT REMOVAL

- Insert the key (1) into the lock (2) and turn counter clockwise.

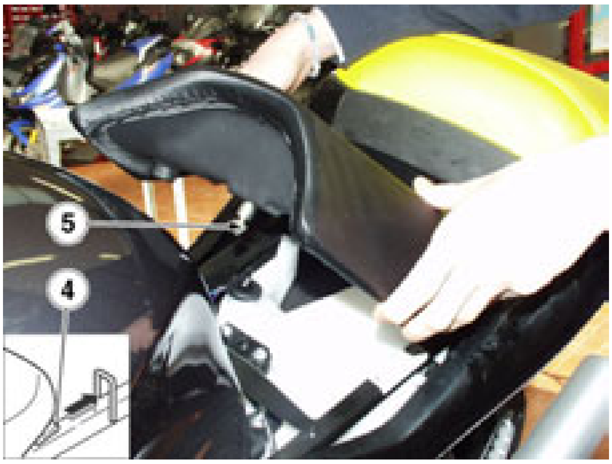


- Lift and remove the seat.
- Remove the lid (3).



INSTALLATION

- Locate the tabs (4) at the seat rear end into the suitable recesses.
- Locate the anchor point (5) into its seat. Lower the seat and press down and the latch will engage.



***NOTE** Make sure the seat is positioned correctly and safely engaged before riding.*

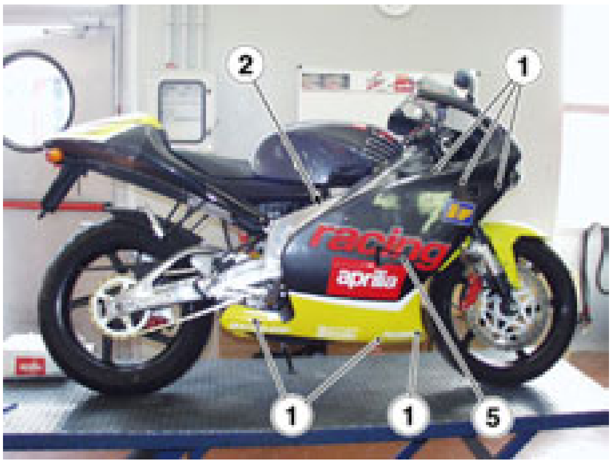
7.1.3. REMOVING THE SIDE FAIRINGS

TORQUE WRENCH SETTINGS

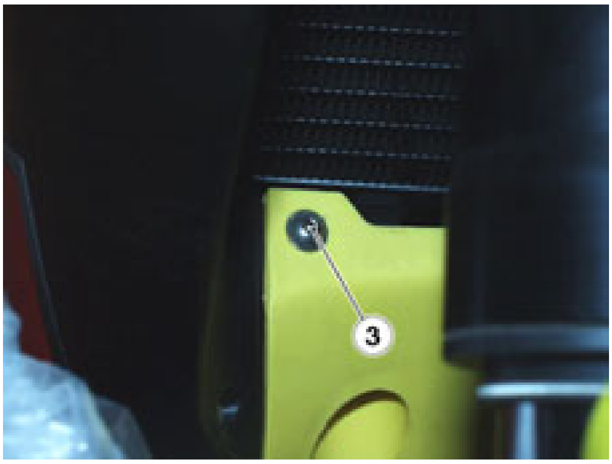
Screws (1-3-7-9)	3 Nm (0.3 Kgm)
Screws (12)	2 Nm (0.2 Kgm)

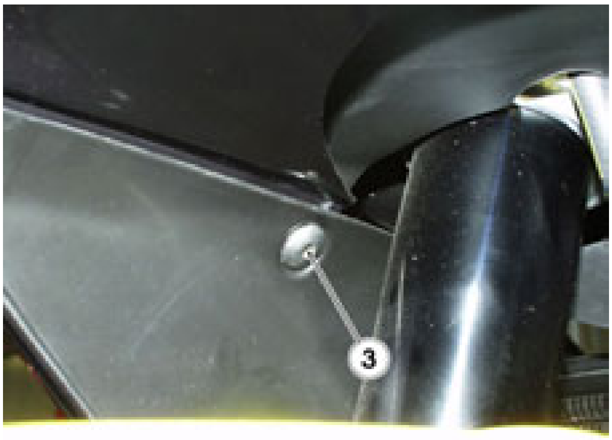
RIGHT-HAND SIDE FAIRING

- Release and remove the six screws (1).
- Withdraw the pin (2).

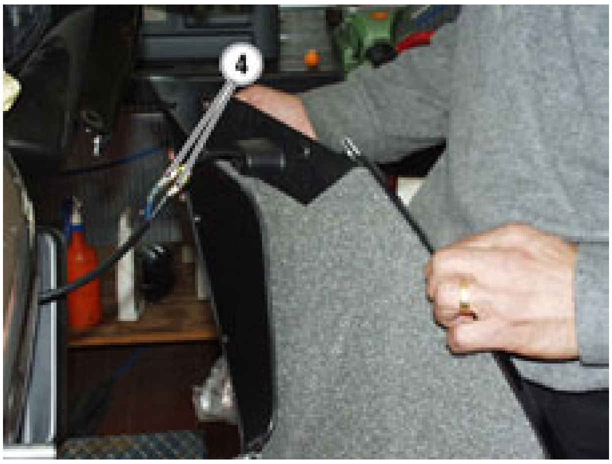


- Release and remove the two screws (3) at the front end.



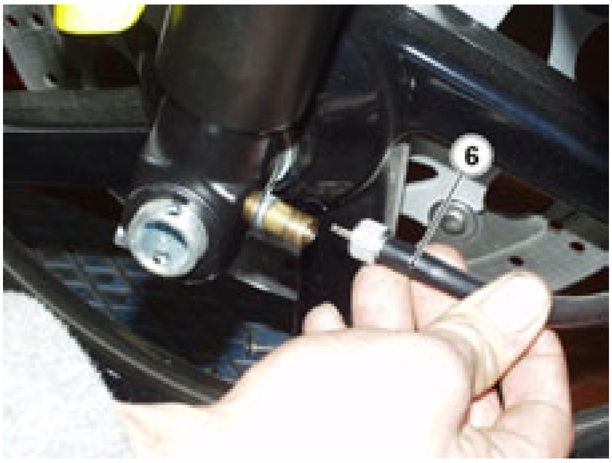


- Disconnect the two electrical connectors (4) of the direction indicator.
- Remove the right side fairing (5).

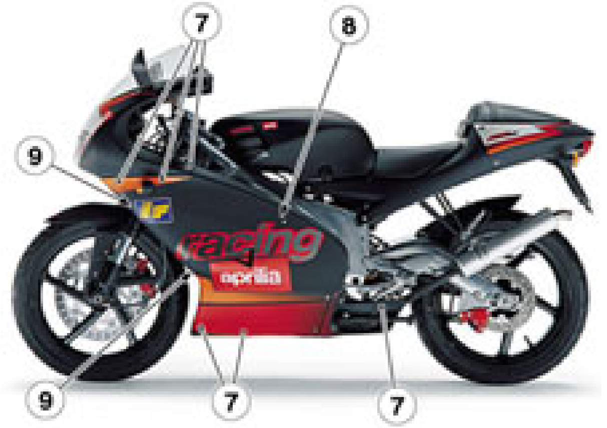


LEFT-HAND SIDE FAIRING

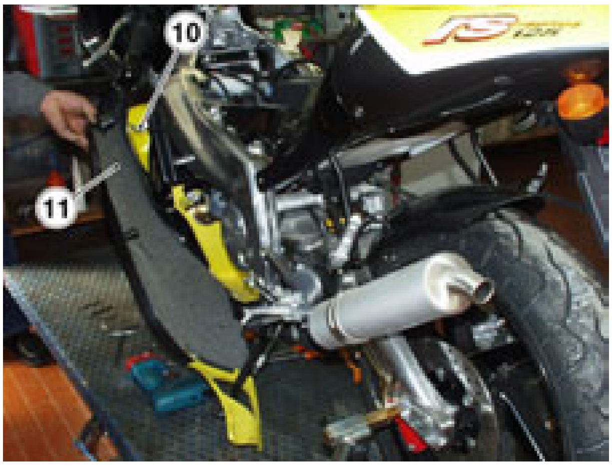
- Put the motorcycle on the rear wheel stand (OPT), see ☞ 1.7.2.
- Lower the side stand.
- Disconnect the speedometer cable (6).



- Release and remove the six screws (7).
- Withdraw the pin (8).
- Release and remove the two screws (9) at the front end.

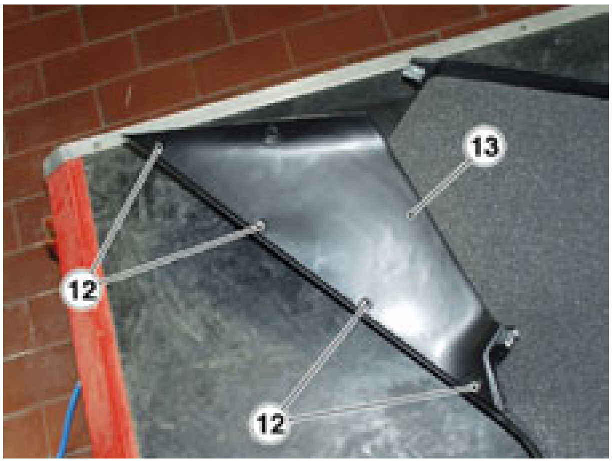


- Disconnect the two electrical connectors (10) of the direction indicator.
- Remove the left side fairing (11) sliding it along the side stand.



The following applies to both side fairings:

- If you need to remove the inner protection (13), release and remove the four screws (12).

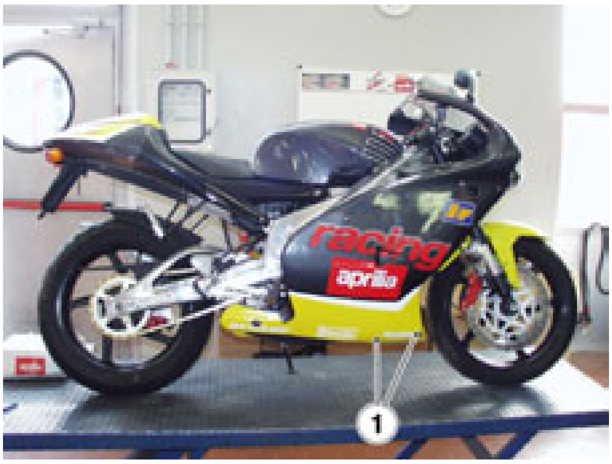


7.1.4. AIR DAM REMOVAL

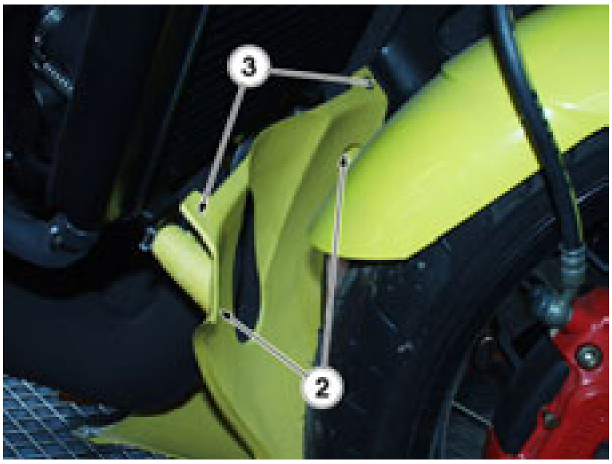
TORQUE WRENCH SETTINGS

Screws (1-2-3)	3 Nm (0.3 Kgm)

- Release and remove the two side screws (1) on either side.



- Release and remove the two screws (2).
- Release and remove the two screws (3).
- Remove the air dam.



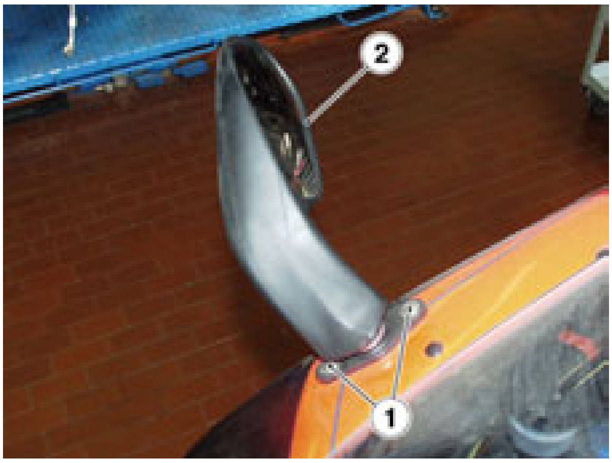
7.1.5. FRONT FAIRING REMOVAL

TORQUE WRENCH SETTINGS

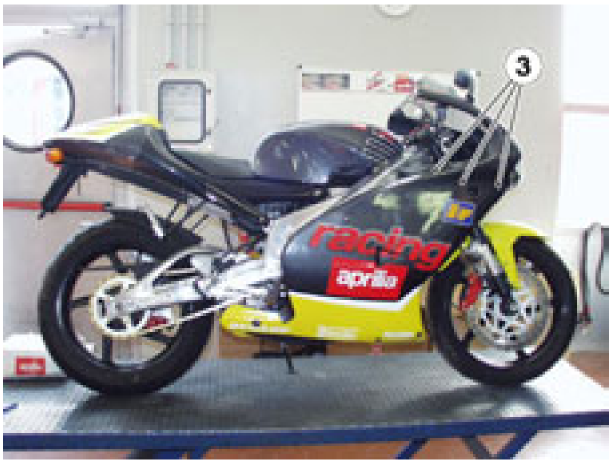
Screws (1-3)	3 Nm (0.3 Kgm)

Repeat these three steps on either side:

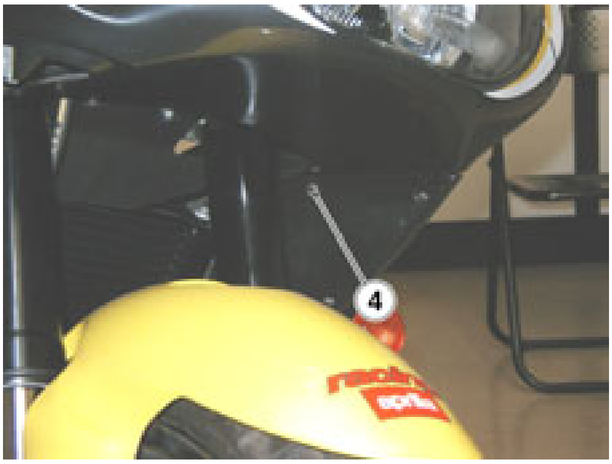
- Release and remove the two screws (1).
- Remove the rearview mirror (2).



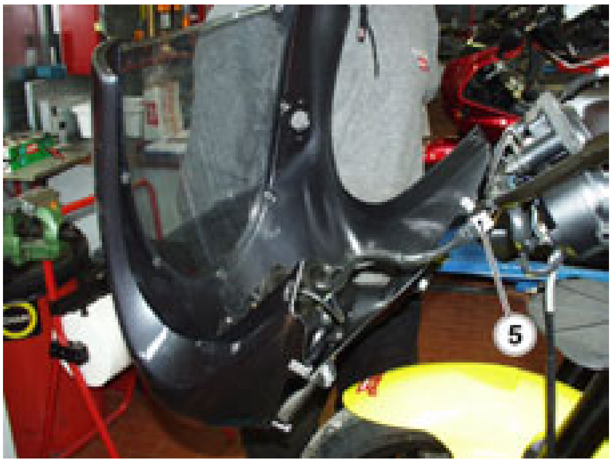
- Release and remove the three screws on the side fairing (3).



- Release and remove the screw (4).

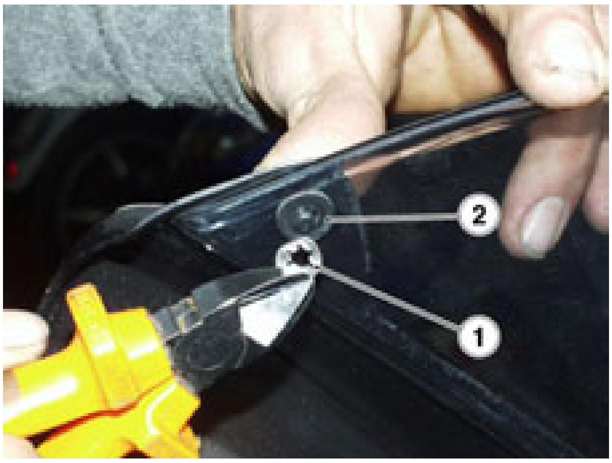


- Disconnect the headlight connector (5).
- Remove front fairing and headlamp together.

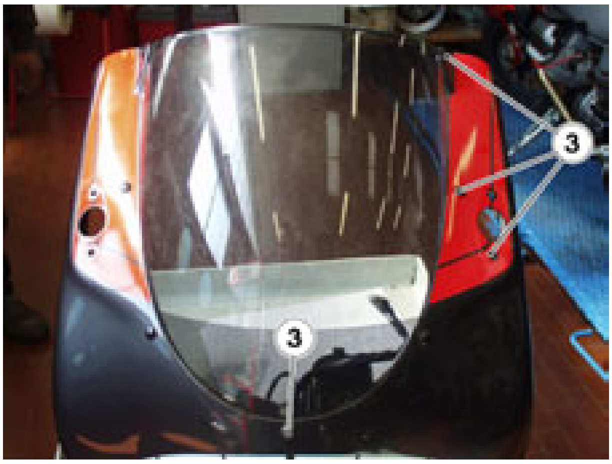


7.1.6. WINDSCREEN REMOVAL

- Working from inside the front fairing, remove the seven washers (1) and collect the seals (2).

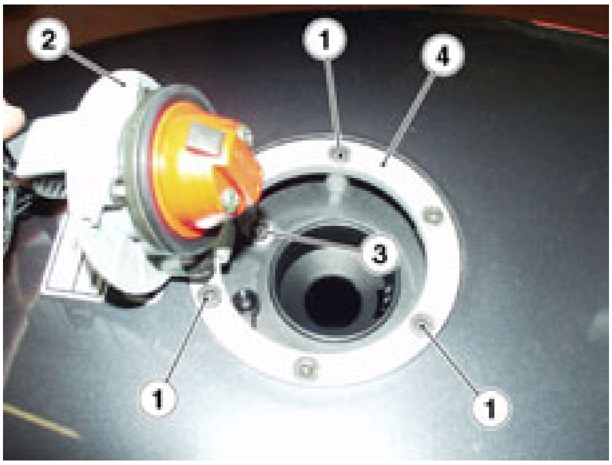


- Remove the seven retaining pins (3).
- Remove the windscreen.



NOTE *Fit new washers (1) on assembly.*

7.1.7. FUEL TANK FILLER CAP REMOVAL



TORQUE WRENCH SETTINGS

Screws (1)	5 Nm (0.5 kgm)
Screws (3)	3 Nm (0.3 kgm)

- Put the motorcycle on the stand.
- Release and remove the three screws (1).

NOTE *The other three screws are there for aesthetic purposes only and can be left in place.*

- Open the filler cap (2).

WARNING
Be careful when removing the screw (3). Take care not to drop it into the fuel tank.

- Release and remove the screw (3).
- Remove the filler cap (2) together with the flange (4).

WARNING
Block off the filler opening to prevent the ingress of dirt.

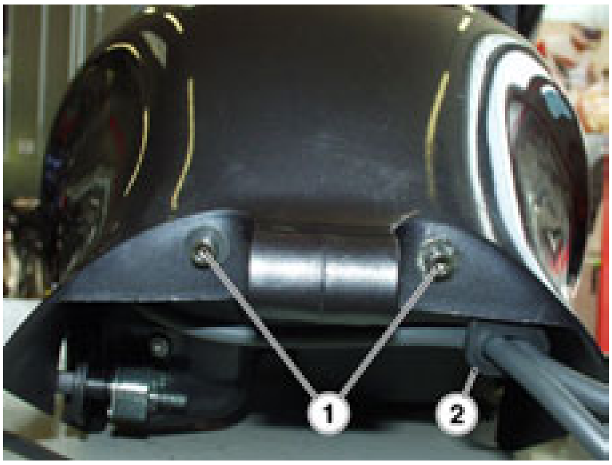
7.1.8. FUEL TANK FAIRING REMOVAL

TORQUE WRENCH SETTINGS

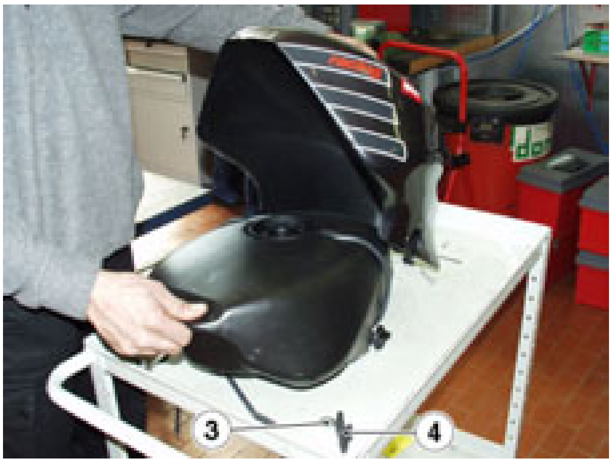
Fuel tank fairing screws (1) 3 Nm (0.3 Kgm).

- Remove the fuel tank and place it on a work bench; see 4.1.2.
- Release and remove the two screws (1). Collect the washers and the rubber spacer (2).

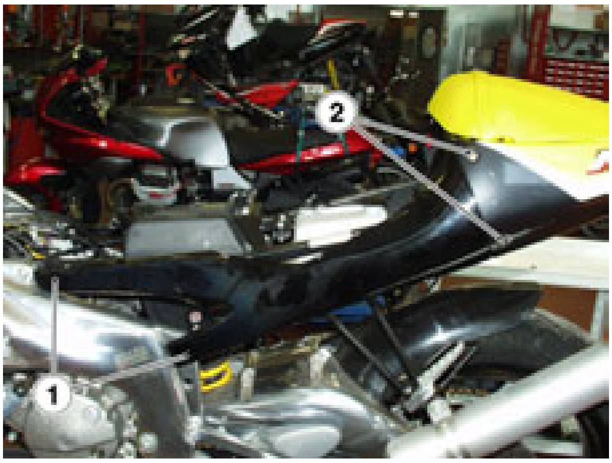
NOTE *Fit the rubber spacer (2) in the correct position on assembly.*



- Remove the filler cap; see 7.1.6.
- Remove the tank fairing and collect bush (3) and grommet (4) at the front end.



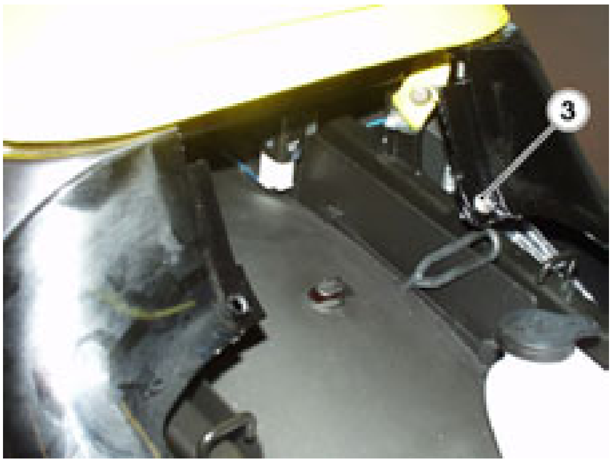
7.1.9. SEAT SUBFRAME COVER REMOVAL



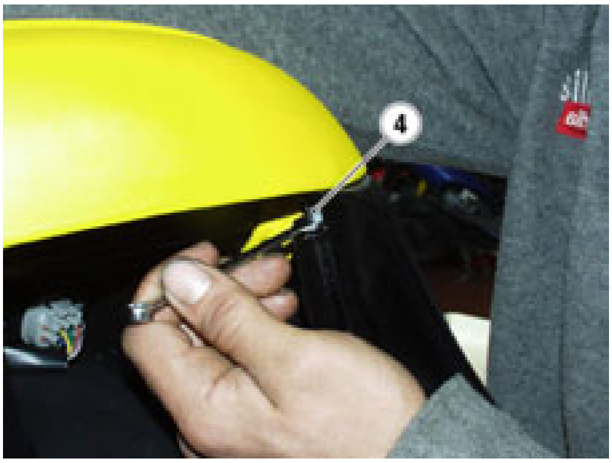
TORQUE WRENCH SETTINGS

Front screws (1)	3 Nm (0.3 Kgm).
Rear screws (2)	2 Nm (0.2 Kgm).
Inner screw (3)	3 Nm (0.3 Kgm).
Nut (4)	5 Nm (0.5 Kgm).

- Remove the seat; see 7.1.1.
- Release and remove the two front screws (1).
- Release and remove the two rear screws (2).



- Release and remove the inner screw (3) and collect the nut.



- Undo and remove the nut (4).
- Remove the seat subframe cover.

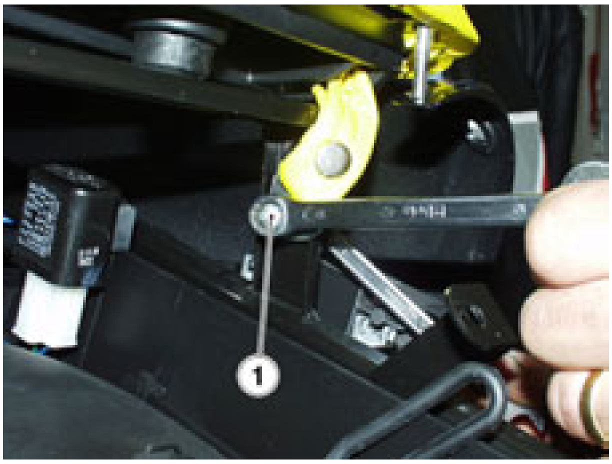
NOTE *If needed, repeat the process for the other seat subframe cover.*

7.1.10. TAIL REMOVAL

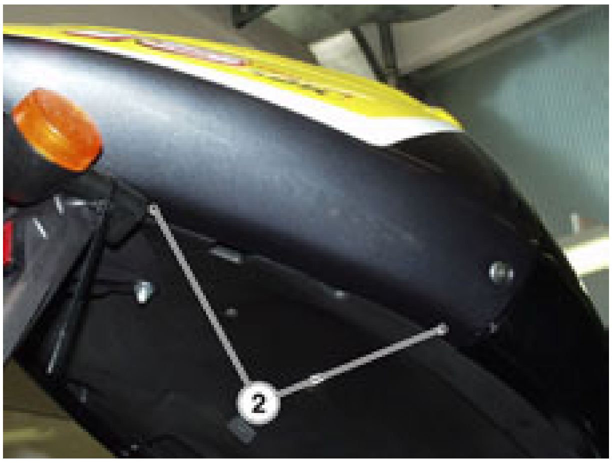
TORQUE WRENCH SETTINGS

Inner nuts (1)	5 Nm (0.5 Kgm).
Screws (2)	2 Nm (0.2 Kgm).
Screws (3)	2 Nm (0.2 Kgm).

- Remove both seat subframe covers; see 7.1.8.
- Undo and remove the two inner nuts (1) and collect the screws.



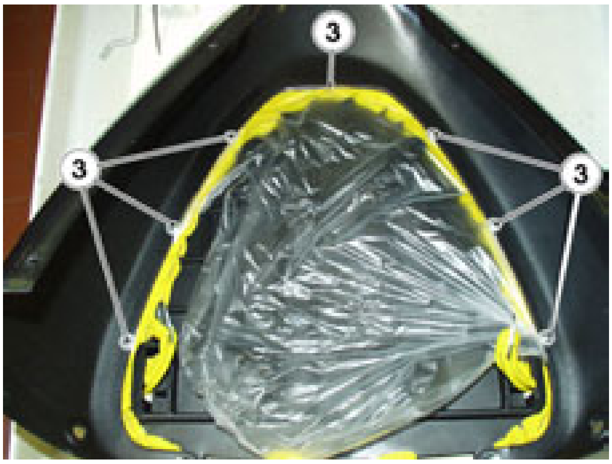
- Release and remove the two screws (2) on both sides.



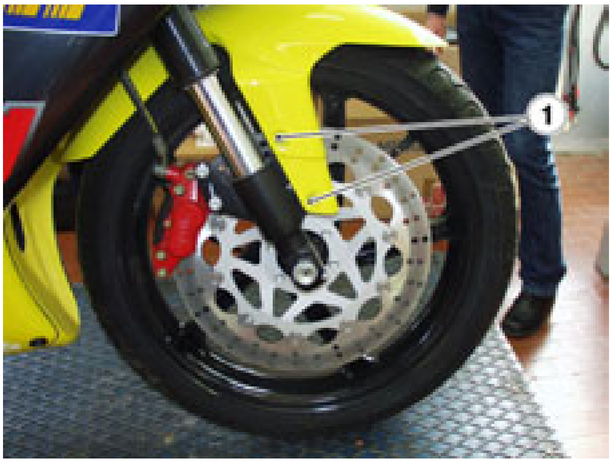
- Remove the tail section complete with passenger seat.

To remove the passenger seat and the strap:

- Release and remove the seven screws (3).



7.1.11. REMOVING THE FRONT MUDGUARD



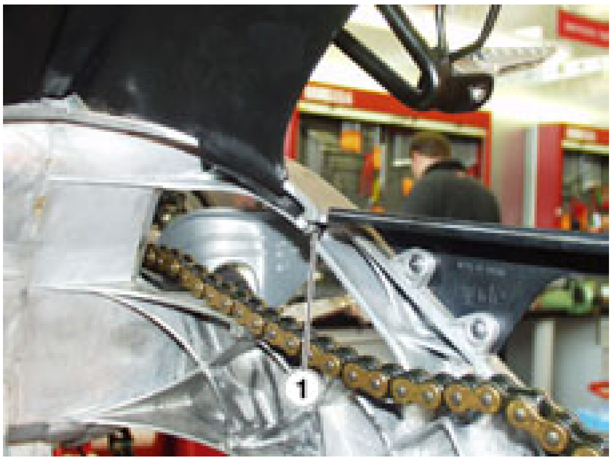
TORQUE WRENCH SETTINGS

Screws (1)	2 Nm (0.2 Kgm).

- Release and remove the two screws (1) on both sides.
- Remove the front mudguard.

7.1.12. REMOVING THE REAR MUDGUARD

- Release and remove the screw (1) on both sides.
- Remove the rear mudguard.

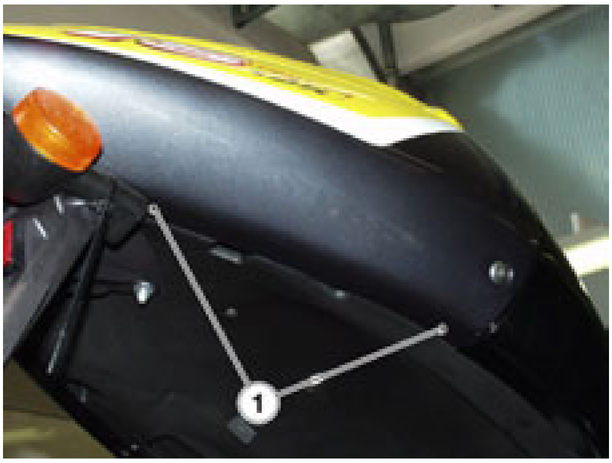


7.1.13. REMOVING THE SEAT END COVER

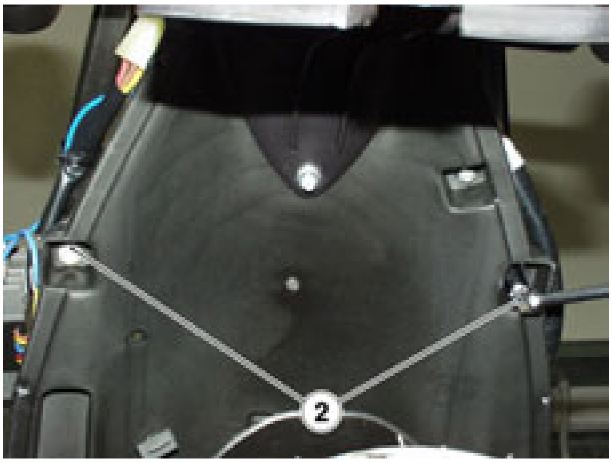
TORQUE WRENCH SETTINGS

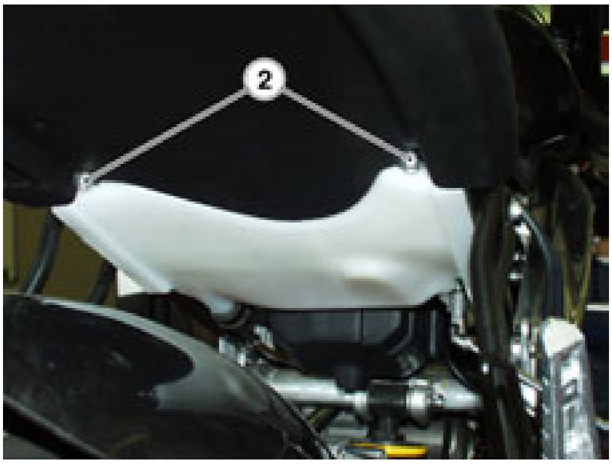
Screws (1)	2 Nm (0.2 Kgm).
Screws (2)	3 Nm (0.3 Kgm).
Screws (4)	3 Nm (0.3 Kgm).

- Remove the seat; see 7.1.1.
- Release and remove the two screws (1) on both sides.

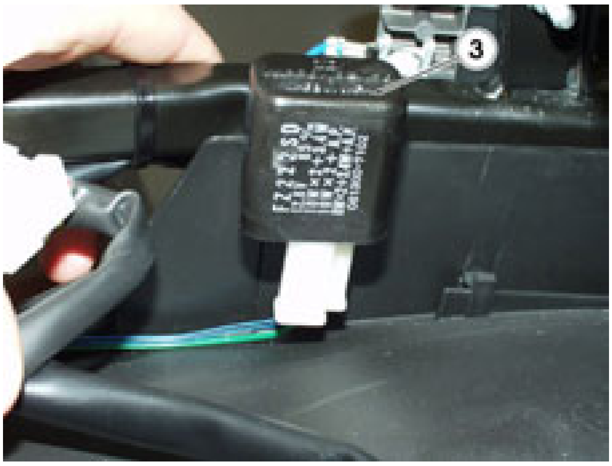


- Release and remove the four screws (2).
- Lower the seat end cover.

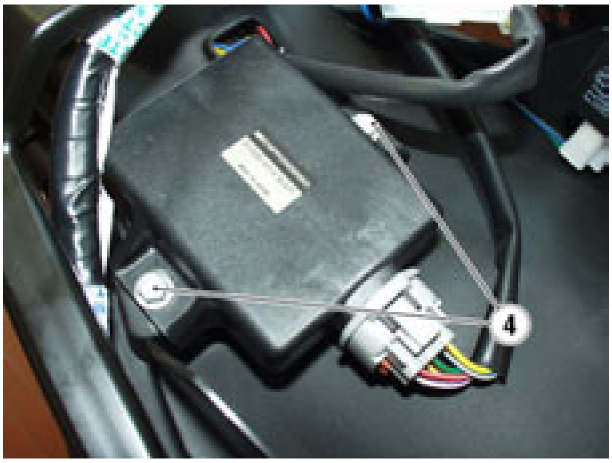




- Remove the flasher (3) from its housing.



- Remove the number plate bracket; see ☞ 7.1.13.
- Unscrew the two screws (4) and collect the nut.
- Remove the ECU.
- Pull the seat end cover in a rearward motion to remove.



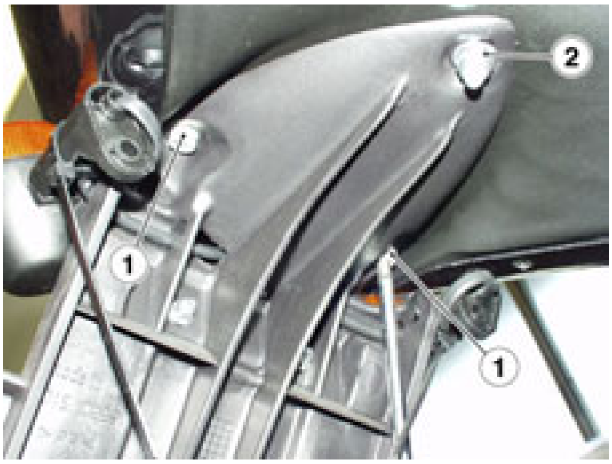
7.1.14. REMOVING THE NUMBER PLATE BRACKET

Read 1.2.1 carefully.

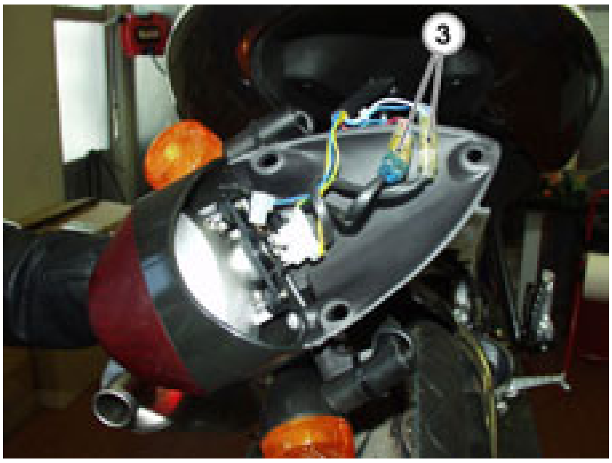
TORQUE WRENCH SETTINGS

Screws (1)	3 Nm (0.3 kgm)
Nut (2)	3 Nm (0.3 kgm)

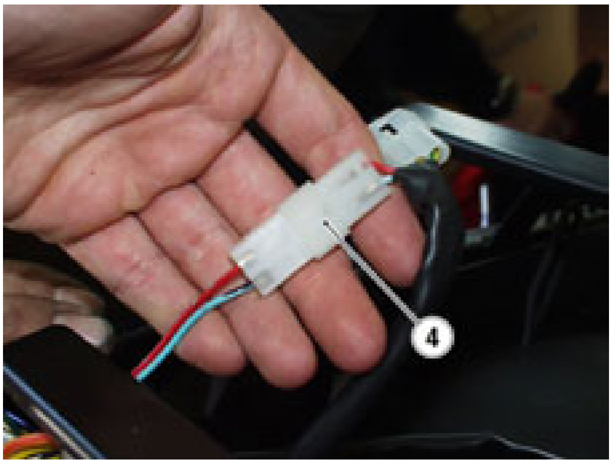
- Release and remove the two screws (1).
- Undo and remove the nut (2).



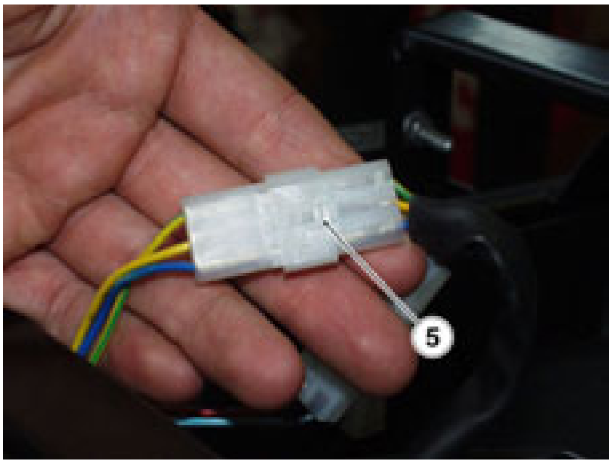
- Disconnect the four connectors of the rear direction indicators (3).



- Disconnect the number plate light connector (4).



- Disconnect the tail light connector (5).
- Remove the number plate bracket together with direction indicators and tail light.

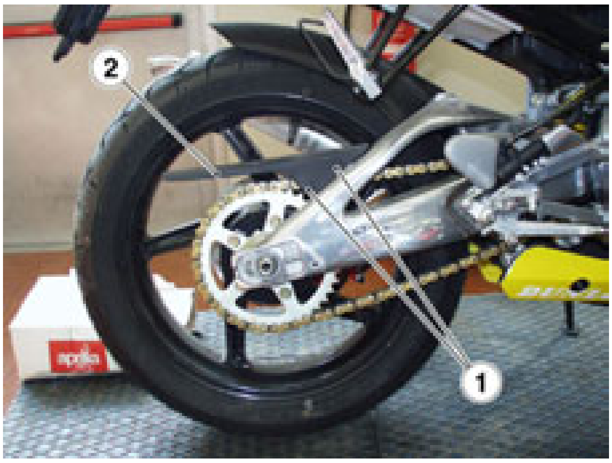


7.1.15. CHAIN GUARD REMOVAL

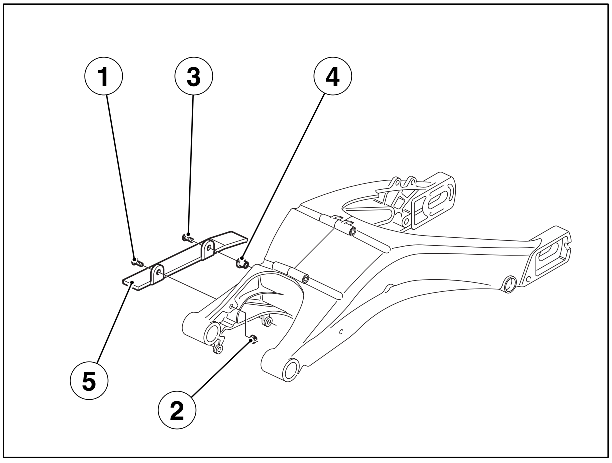
TORQUE WRENCH SETTINGS

Screws (1)	2 Nm (0.2 kgm)

- Release and remove the two screws (1).
- Remove the chain guard (2).



7.1.16. UPPER CHAIN SLIDER REMOVAL



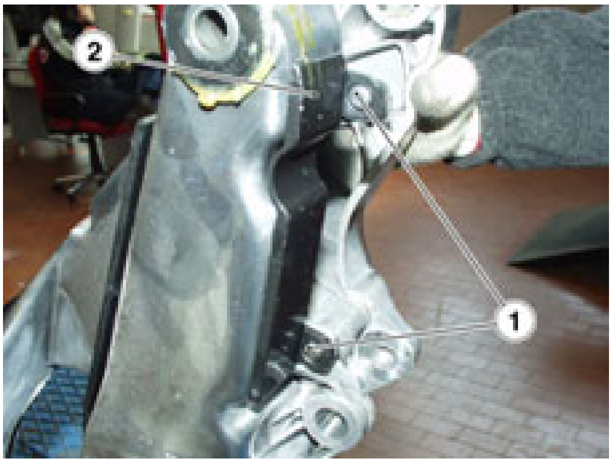
TORQUE WRENCH SETTINGS

Screw (1)	2 Nm (0.2 kgm)
Screw (3)	2 Nm (0.2 kgm)

NOTE *The chain slider is best accessed after splitting the drive chain; see* 7.13.1.

- Release and remove the screw (1) and collect the nut (2).
- Release and remove the screw (3) and collect the grommet (4).
- Remove the upper chain slider (5).

7.1.17. LOWER CHAIN SLIDER REMOVAL



TORQUE WRENCH SETTINGS

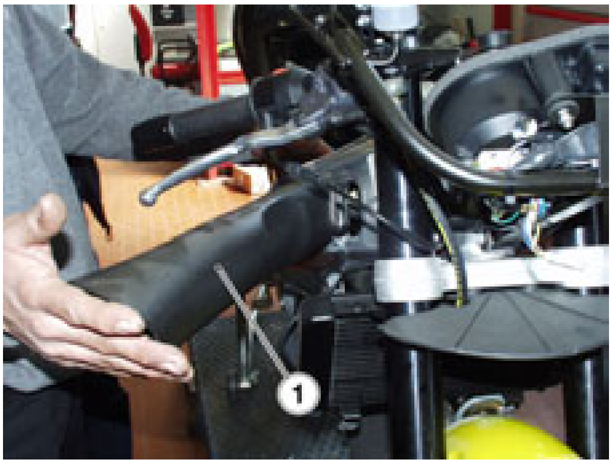
Screws (1)	2 Nm (0.2 kgm)

NOTE *The chain slider is best accessed after splitting the drive chain; see* 7.13.1.

- Release and remove the two screws (1).
- Remove the lower chain slider (2).

7.1.18. AIR SCOOP REMOVAL

- Remove the front fairing; see 7.1.4.
- Remove the air scoop (1).



7.2. ELECTRIC COMPONENTS

7.2.1. BATTERY REMOVAL

Read 1.2.1 **carefully.**

TORQUE WRENCH SETTINGS

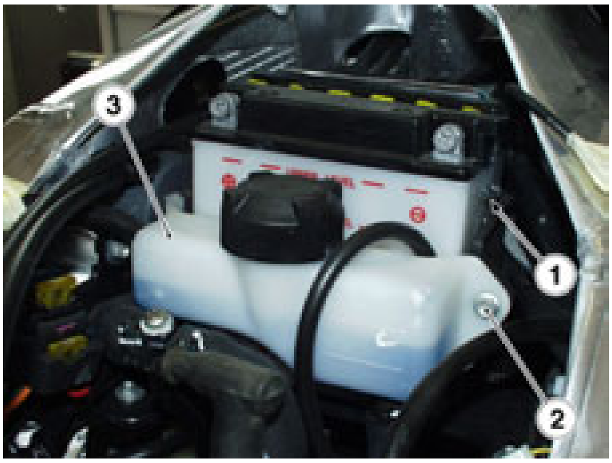
Screw (2)	3 Nm (0.3 kgm)

NOTE *When the battery is removed, the digital clock will be reset to zero. See clock setting instructions at paragraph* 2.3.1.

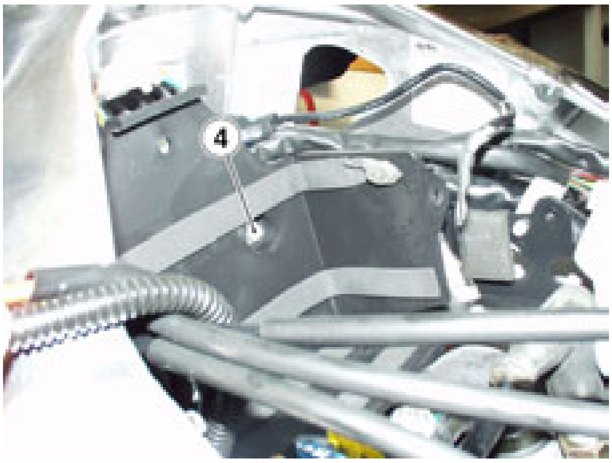
- Lift the fuel tank; see 2.7.1.
- Disconnect the negative lead (–) and the positive lead (+) in the order.

- Remove the battery breather tube (1).
- Release and remove the screw (2).
- Move aside the coolant expansion reservoir (3).
- Take the battery out its mount. Place the battery on a level surface, in a cool, dry place.

WARNING
On refitting, pay particular attention to the breather tube. Make sure to connect the positive (+) lead first, then the negative (-) lead.



- If needed, release and remove the screw (4) and remove the battery box mount.

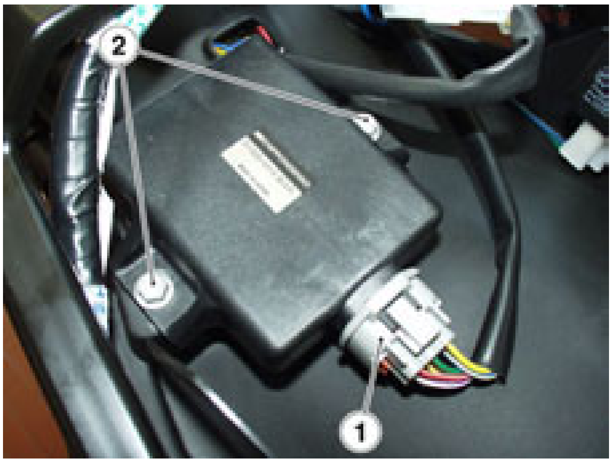


7.2.2. REMOVING THE ENGINE CONTROL UNIT

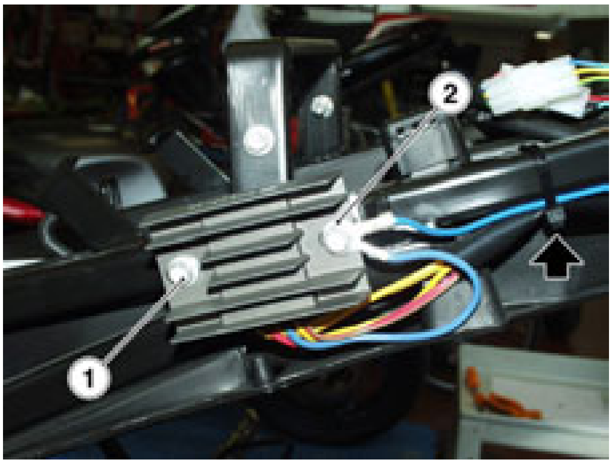
TORQUE WRENCH SETTINGS

Screw (2)	3 Nm (0.3 kgm)

- Remove the tail section; see ☞ 7.1.9.
- Disconnect the connector (1).
- Release and remove the two screws (2) and collect the nuts underneath.
- Remove the Engine Control Unit.



7.2.3. VOLTAGE RECTIFIER REMOVAL

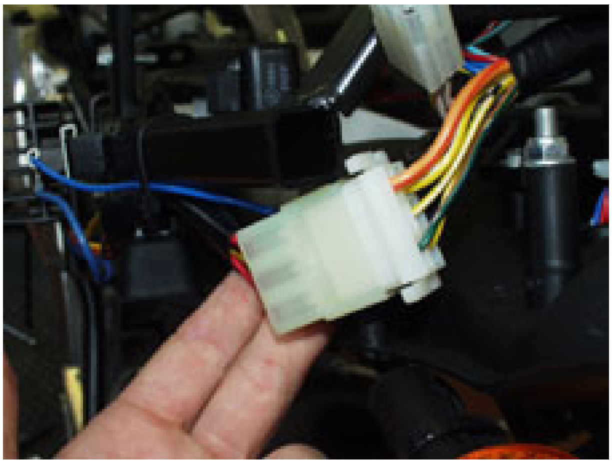


TORQUE WRENCH SETTINGS

Screw (1-2)	10 Nm (1.0 Kgm)

- Remove the tail section; see 7.1.9.
- Release the wiring from the clip.
- Release and remove the screw (1) and collect the washer.
- Release and remove the screw (2).

NOTE *Refit the two grounding wires under the screw (2) on assembly.*



- Disconnect the connector.
- Remove the voltage rectifier.

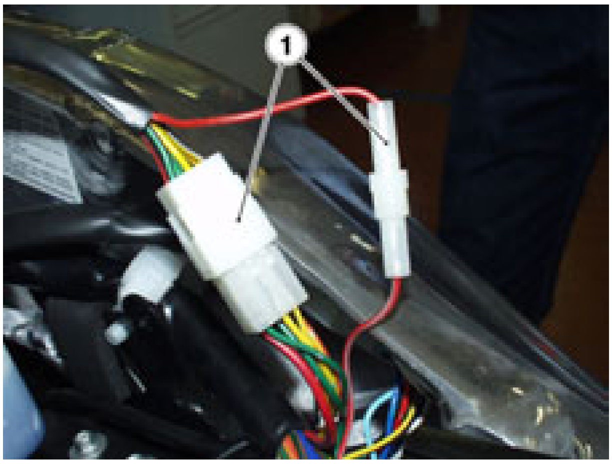
7.2.4. REMOVING THE RIGHT-HAND LIGHT DIP SWITCH

Read 1.2.1 carefully.

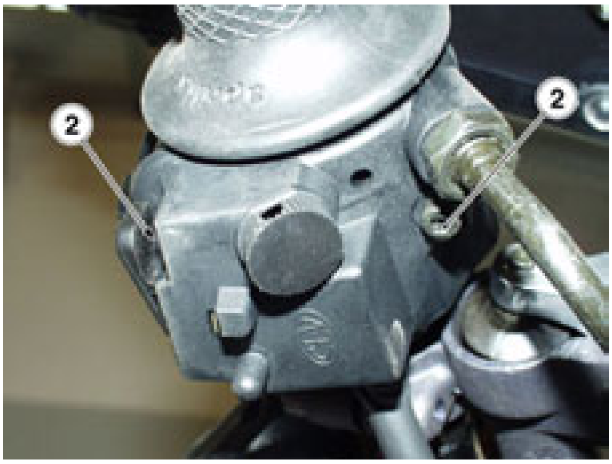
TORQUE WRENCH SETTINGS

Screws (2) 3 Nm (0.3 kgm)

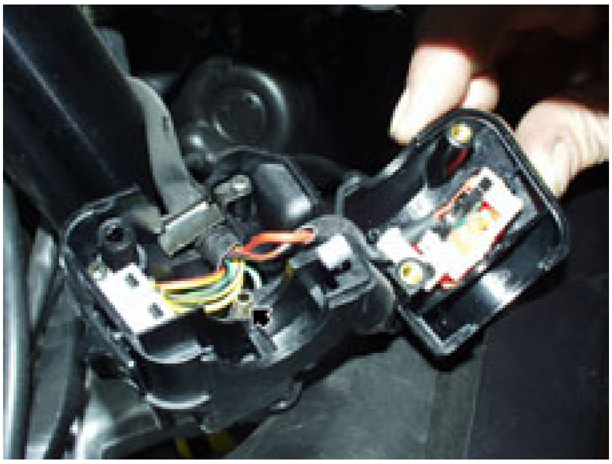
- Lift the fuel tank; see 2.9.1.
- Disconnect the two connectors (1) of the right-hand light dip switch.



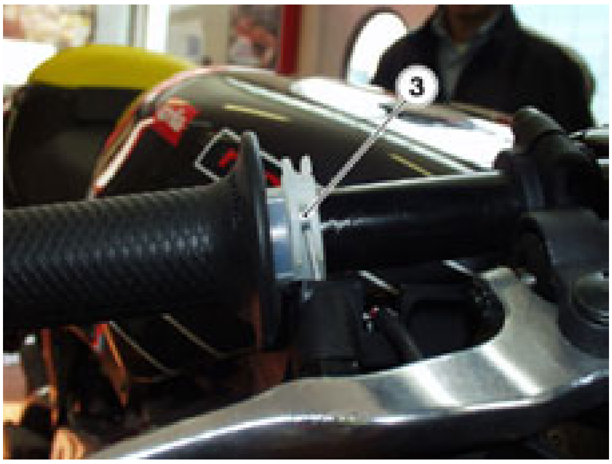
- Release and remove the two screws (2) securing the two shells at the bottom end.
- Separate the two shells.



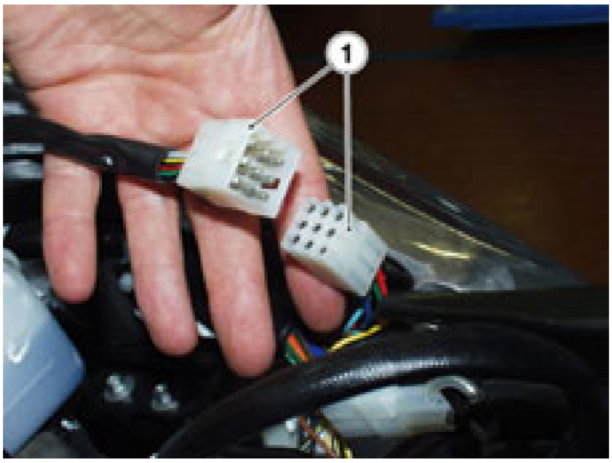
WARNING
On refitting, position the bottom shell first, making sure the locating peg becomes fully seated into the handlebar hole.



- Disconnect the throttle cable (3).
- Release the wiring from the clips and remove the right-hand light dip switch.



7.2.5. REMOVING THE LEFT-HAND LIGHT DIP SWITCH

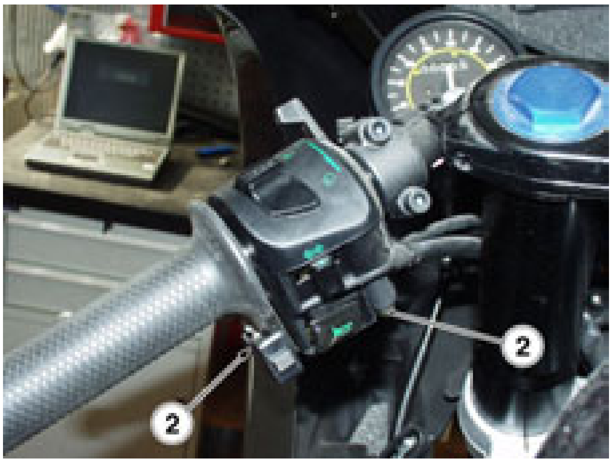


Read 1.2.1 carefully.

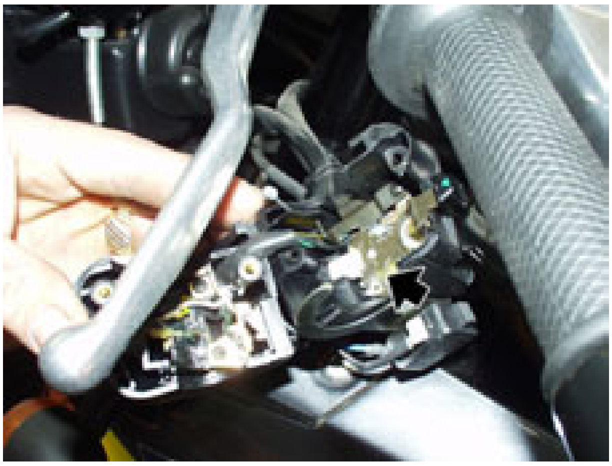
TORQUE WRENCH SETTINGS

Screws (2)	3 Nm (0.3 kgm)

- Lift the fuel tank; see 2.9.1.
- Disconnect the connector (1) of the left-hand light dip switch.

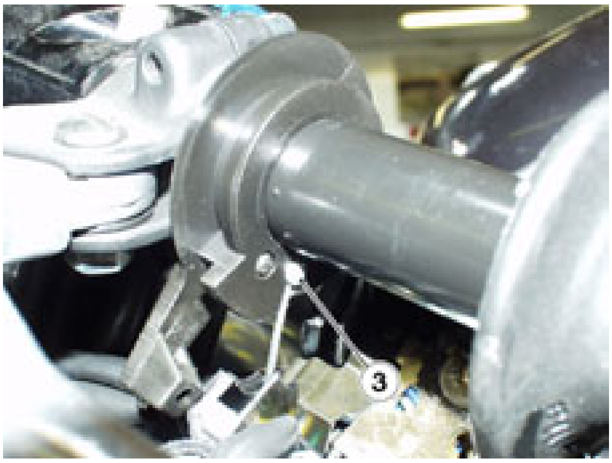


- Release and remove the two screws (2) securing the two shells at the bottom end.



- Separate the two shells.

WARNING
On refitting, position the bottom shell first, making sure the locating peg becomes fully seated into the handlebar hole.



- Disconnect the cold-start cable (3).
- Release the wiring from the clips and remove the left-hand light dip switch.

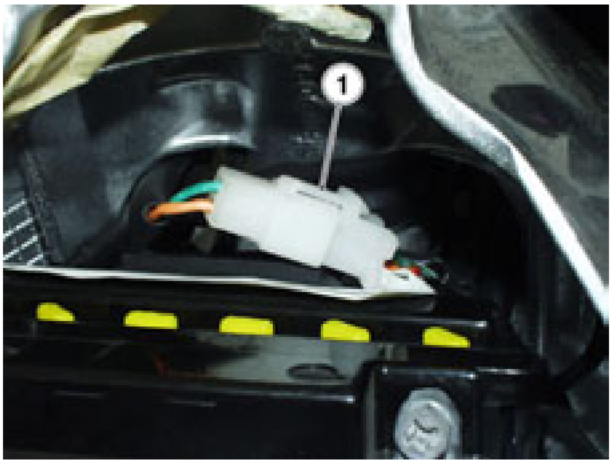
7.2.6. REMOVING THE IGNITION SWITCH/STEERING LOCK

Read 1.2.1 **carefully.**

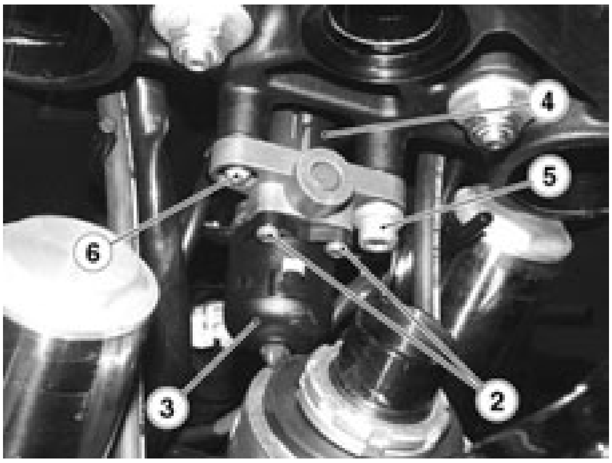
TORQUE WRENCH SETTINGS

Screw (5-6)	25 Nm (2.5 kgm)

- Remove the top yoke; see 2.16.1.
- Lift the fuel tank; see 2.9.1.
- Disconnect the connector (1) of the ignition switch assembly at the main wiring harness.



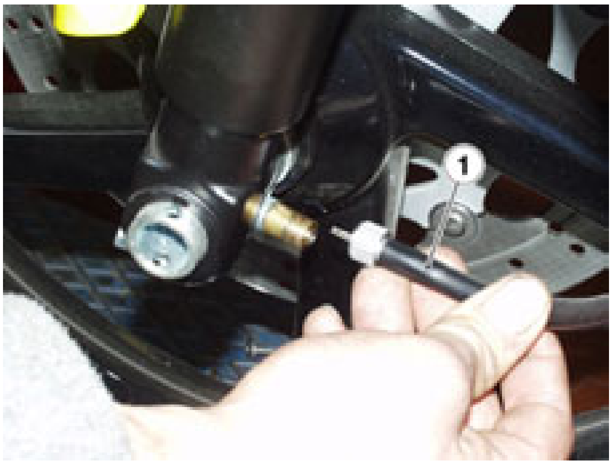
- Release and remove the two screws (2).
- Pull the switch (3) in a downward motion to remove.
- If you need to remove the ignition switch/steering lock (4) completely:
- Perform the first five steps.
- Release and remove the two screws (5-6).
- Pull the ignition switch/steering lock (4) in a downward motion to remove.



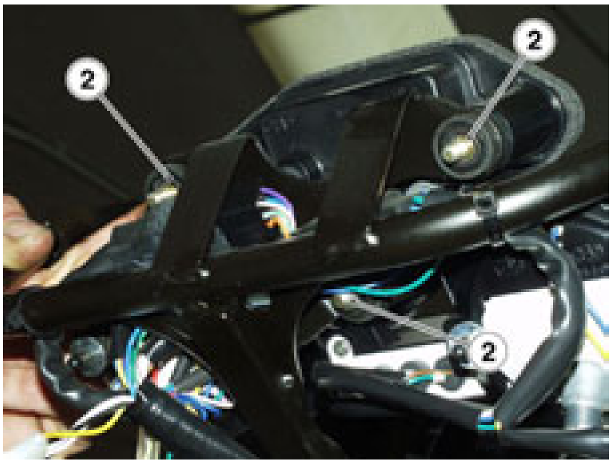
7.2.7. REMOVING THE INSTRUMENT PANEL

Read ☞ 1.2.1 carefully.

- Remove the front fairing; see ☞ 7.1.4.
- Disconnect the speedometer cable (1) and remove it from the left fairing.

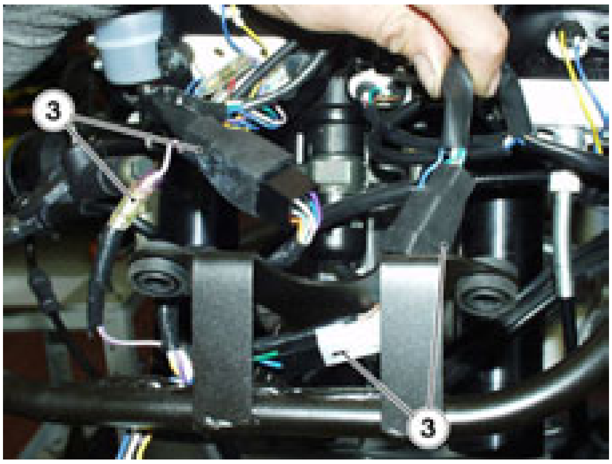


- Undo and remove the three nuts (2) and collect the washers.
- Release the instrument panel wiring from the ties.



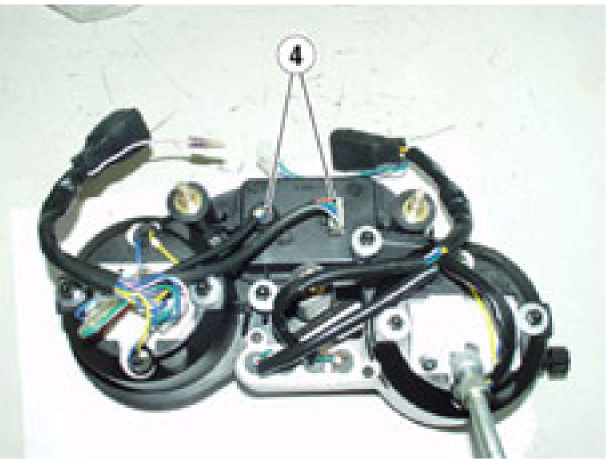
- Disconnect the four connectors (3).
- Remove the instrument panel.

NOTE *Remove the individual components if required.*

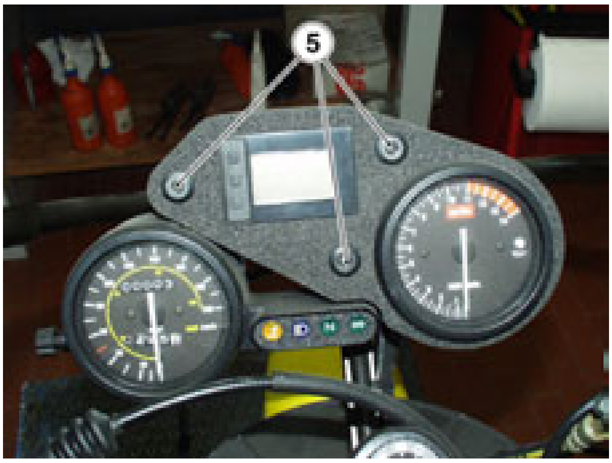


MULTI-FUNCTION COMPUTER

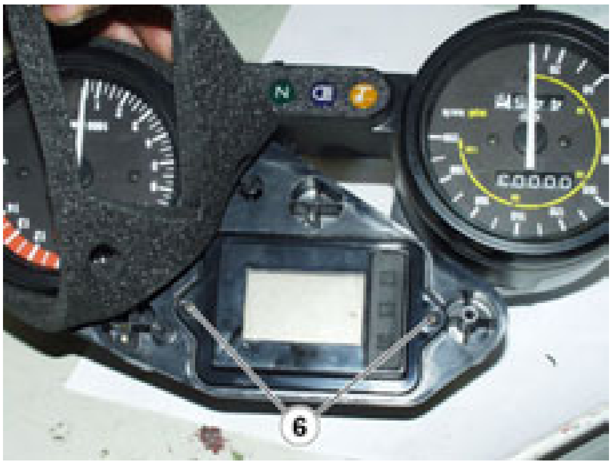
- Disconnect the two connectors (4).



- Release and remove the three screws (5) and collect the bushes.
- Lift the sponge.

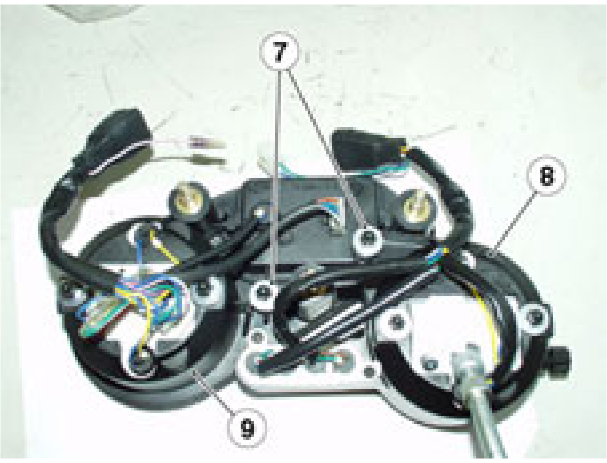


- Release and remove the two screws (6).
- Remove the multi-function computer.



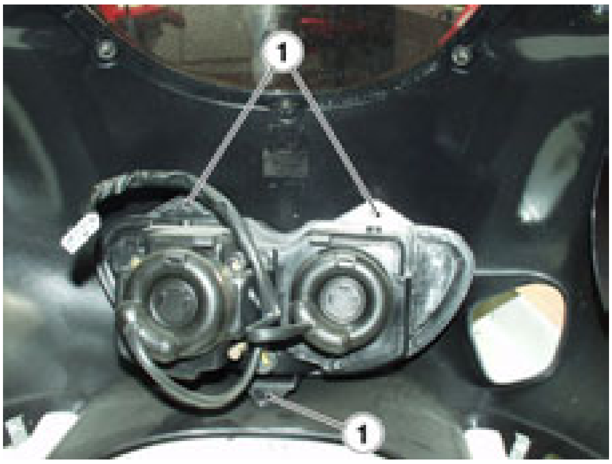
SPEEDOMETER – REV COUNTER

- Undo and remove the two nuts (7) and collect the washers.
- Separate the speedometer – warning light holder (8) from the rev counter – multi-function computer (9).



7.2.8. HEADLIGHT REMOVAL

Read 1.2.1 carefully.



TORQUE WRENCH SETTINGS

Screws (1) 2 Nm (0.2 kgm)

- Remove the front fairing; see 7.1.4.
- Release and remove the three screws (1).
- Remove the headlight.

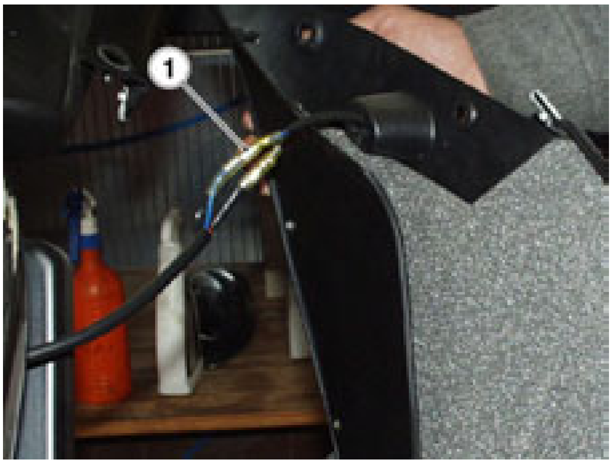
NOTE *See 8.15.1. for instructions on how to replace the bulbs.*

7.2.9. REMOVING THE FRONT DIRECTION INDICATORS

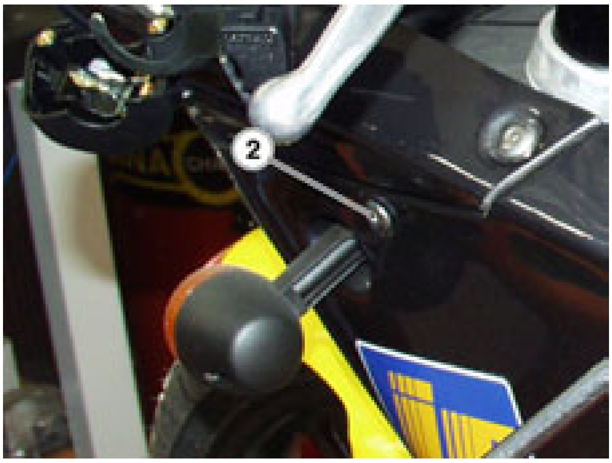
Read 1.2.1 **carefully.**

- Disconnect the connector (1).

NOTE *It is not necessary to remove the fairing.*

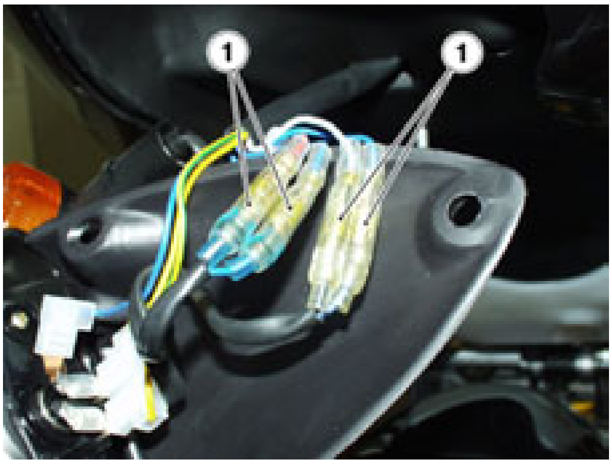


- Release and remove the screw (2).
- Remove the direction indicator.



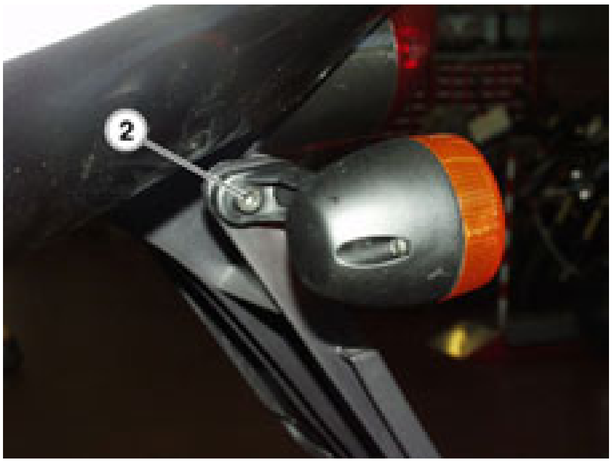
7.2.10. REMOVING THE REAR DIRECTION INDICATORS

Read 1.2.1 carefully.



- Remove the number plate bracket but leave it attached to the wiring; see 7.1.13.
- Disconnect the pair of connectors (1) of the direction indicator you wish to remove. Look at the colour to identify the connectors:

Right indicator: red-blue
Left indicator: light blue-blue



- Release and remove the screw (2).
- Remove the direction indicator.

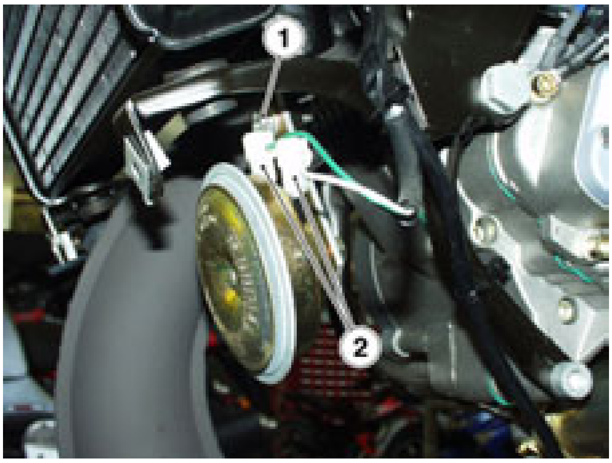
7.2.11. WARNING HORN REMOVAL

Read ☞ 1.2.1 carefully.

TORQUE WRENCH SETTINGS

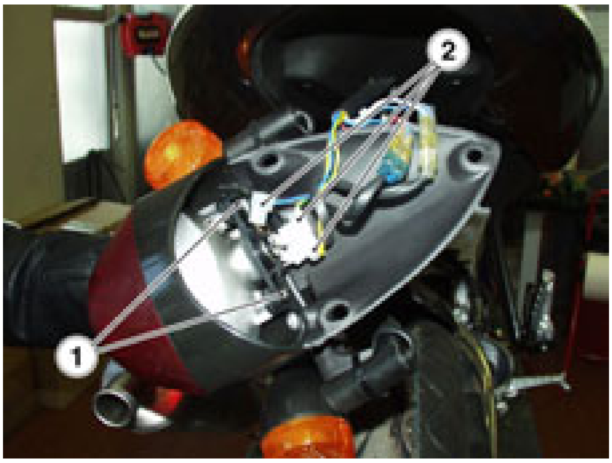
Screw (2)	22 Nm (2.2 kgm)

- Remove the air dam; see ☞ 7.1.3.
- Disconnect the two connectors (1).
- Release and remove the screw (2).
- Remove the horn.



7.2.12. REMOVING THE TAIL LIGHT

Read 1.2.1 carefully.



- Remove the number plate bracket but leave it attached to the wiring; see 7.1.13..
- Disconnect the three tail light connectors (1).

WARNING
Make sure to refit the connectors (1) to the matching connectors on assembly.

- Release and remove the two screws (2).
- Remove the tail light.

7.3. CONTROLS

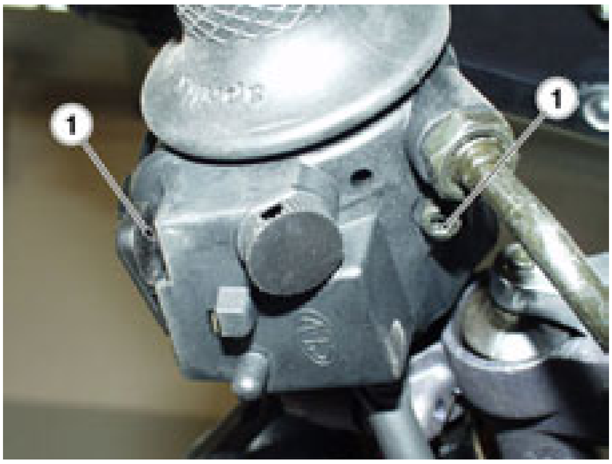
7.3.1. REMOVING THE THROTTLE CONTROL

Read 1.2.1 carefully.

TORQUE WRENCH SETTINGS

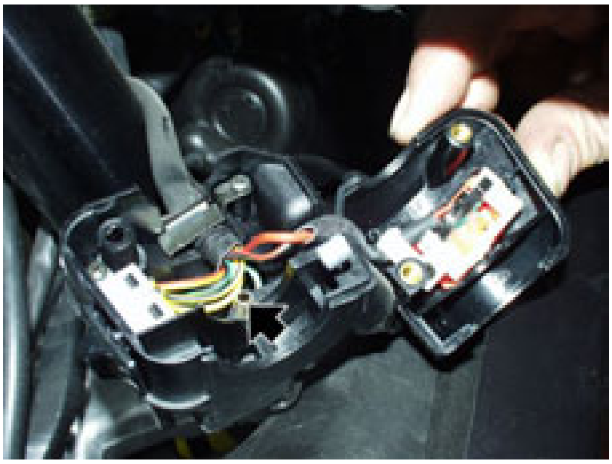
Screws (1)	3 Nm (0.3 kgm)
Screws (3)	10 Nm (1.0 kgm)

- Release and remove the two screws (1) securing the two shells from the bottom.

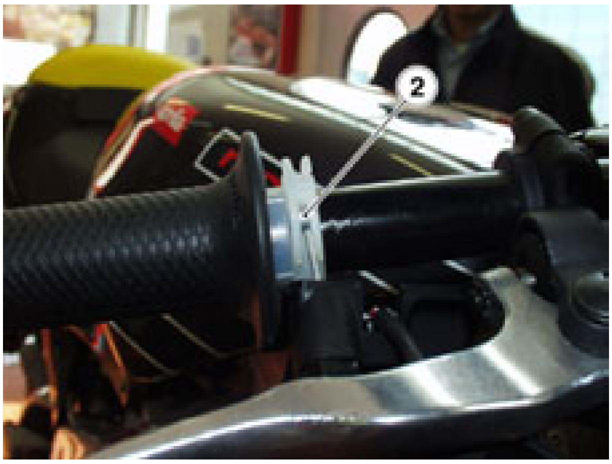


- Separate the two shells.

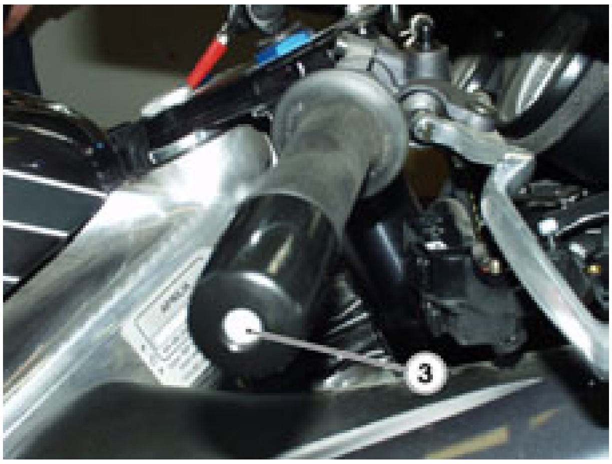
WARNING
On refitting, position the bottom shell first, making sure the locating peg becomes fully seated into the handlebar hole.



- Disconnect the throttle cable (2).



- Unscrew the screw (3) and remove the counterweight.
- Slide the twistgrip off the handlebar. Use an air gun to aid removal.
- Slide the throttle control off the handlebar.



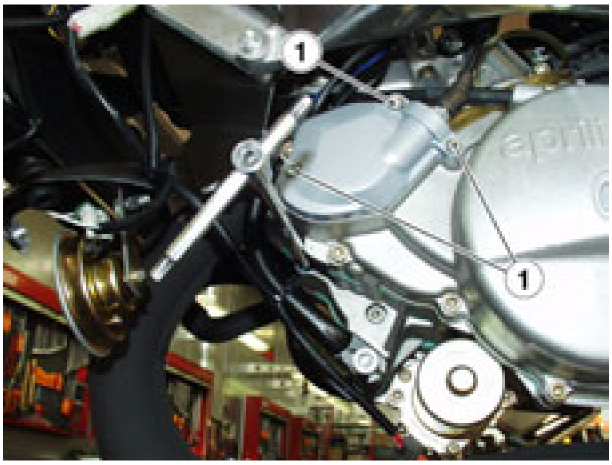
***NOTE** Check throttle cable free play on refitting and adjust as required; see 2.15.1.*

7.3.2. REMOVING THE THROTTLE CABLE FROM INTERMEDIATE PULLEY TO OIL PUMP

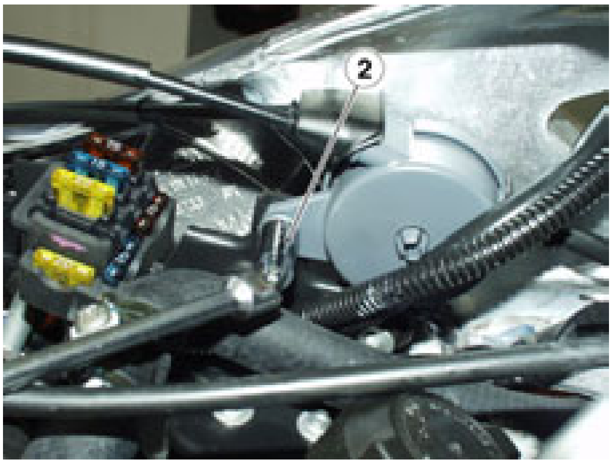
TORQUE WRENCH SETTINGS

Screw (2)	5 Nm (0.5 Kgm)

- Lift the fuel tank, see ☞ 2.9.1.
- Remove the left fairing, see ☞ 7.1.2.
- Loosen and remove the three screws (1) and remove oil pump cover.
- Slide out the throttle cable.

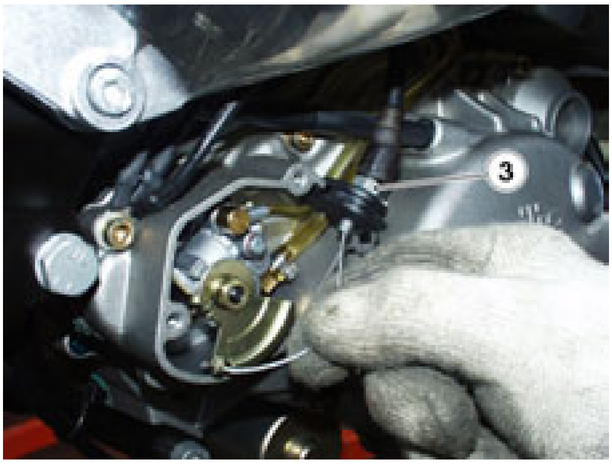


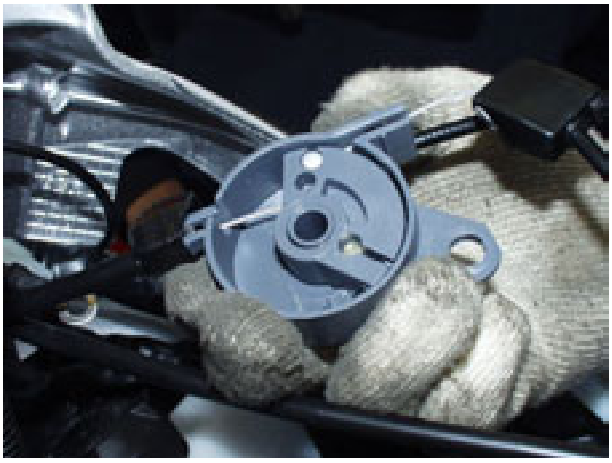
- Loosen and remove screw (2) from frame inner face, on vehicle left side.
- Remove throttle cables pulley cover.



- Slide out throttle cable from oil pump.

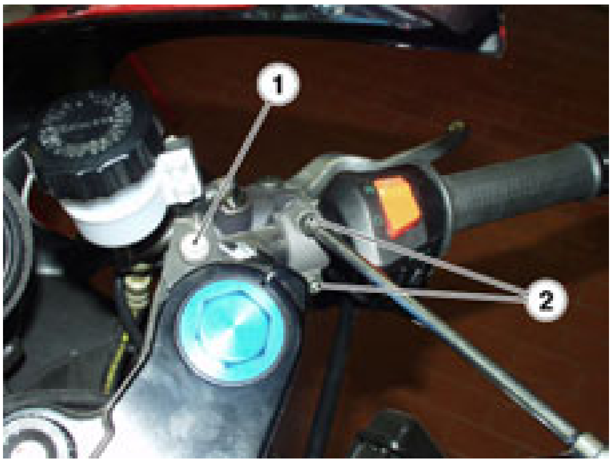
⚠ **WARNING**
Upon reassembly, adjust throttle cable tension by turning nut (3) on the oil pump.





7.3.3. REMOVING THE FRONT BRAKE CONTROL

Read 1.2.1 carefully.



TORQUE WRENCH SETTINGS

Reservoir retaining screw (1)	7 Nm (0.7 kgm)

PARTIAL REMOVAL

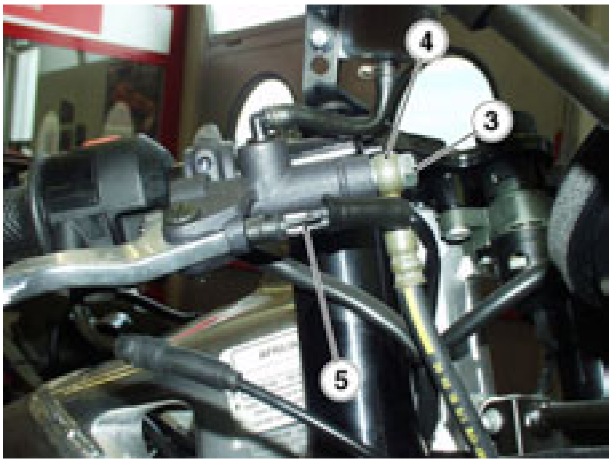
- Release and remove the reservoir retaining screw (1).
- Release and remove the two screws (2) securing the front brake control.

NOTE *Mark clamp position on the handlebar before removal to ensure correct positioning on assembly.*

Remove the clamp and slide the front brake control aside. The front brake control is still retained by hose and wiring.

WARNING
Do not pull on hoses and wiring.
Keep the front brake fluid reservoir in a vertical position to avoid spilling brake fluid, leading to a dangerous condition.

COMPLETE REMOVAL



- Drain the front brake circuit; see 2.12.2.
- When all fluid has drained out, release and remove the screw (3) and collect the two sealing washers.

NOTE *Renew the two sealing washers on assembly. Use washers of the same type fitted originally.*

- Slide a plastic bag onto the fitting (4) and seal the bag using adhesive tape.
- Prise the two connectors of the front brake light switch (5) off their seating in the front brake control using a small flat-blade screwdriver and remove.

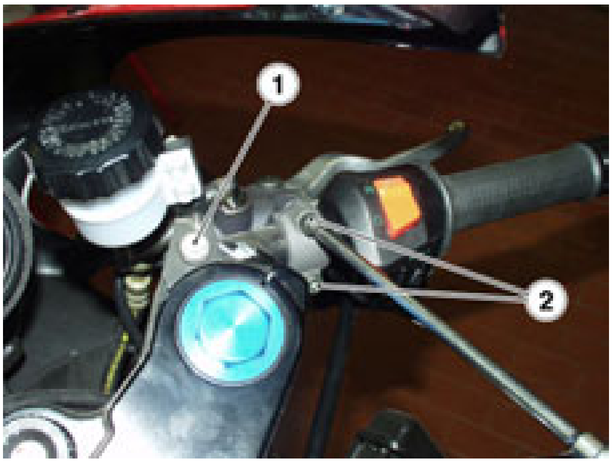
- Release and remove the reservoir mounting screw (1).
- Release and remove the two screws (2) securing the front brake control.

NOTE *Mark clamp position on the handlebar before removal to ensure correct positioning on assembly.*

- Remove the clamp.
- Remove the front brake control together with the front brake fluid reservoir.

7.3.4. REMOVING THE FRONT BRAKE CONTROL

Read 1.2.1 carefully.



TORQUE WRENCH SETTINGS

Reservoir retaining screw (1)	7 Nm (0.7 kgm)

PARTIAL REMOVAL

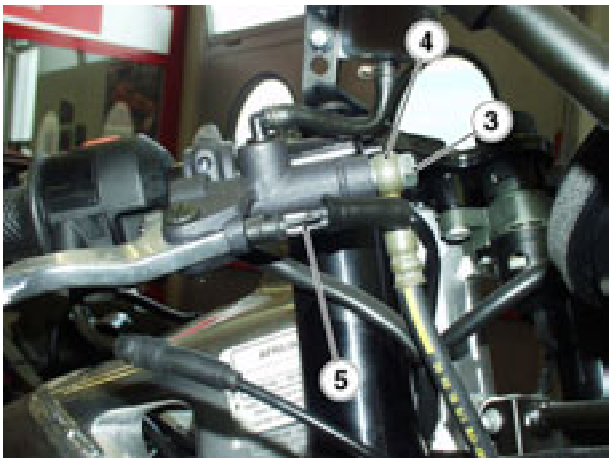
- Release and remove the reservoir retaining screw (1).
- Release and remove the two screws (2) securing the front brake control.

***NOTE** Mark clamp position on the handlebar before removal to ensure correct positioning on assembly.*

Remove the clamp and slide the front brake control aside. The front brake control is still retained by hose and wiring.

WARNING
Do not pull on hoses and wiring.
Keep the front brake fluid reservoir in a vertical position to avoid spilling brake fluid, leading to a dangerous condition.

COMPLETE REMOVAL



- Drain the front brake circuit; see 2.12.2.
- When all fluid has drained out, release and remove the screw (3) and collect the two sealing washers.

***NOTE** Renew the two sealing washers on assembly. Use washers of the same type fitted originally.*

- Slide a plastic bag onto the fitting (4) and seal the bag using adhesive tape.
- Prise the two connectors of the front brake light switch (5) off their seating in the front brake control using a small flat-blade screwdriver and remove.

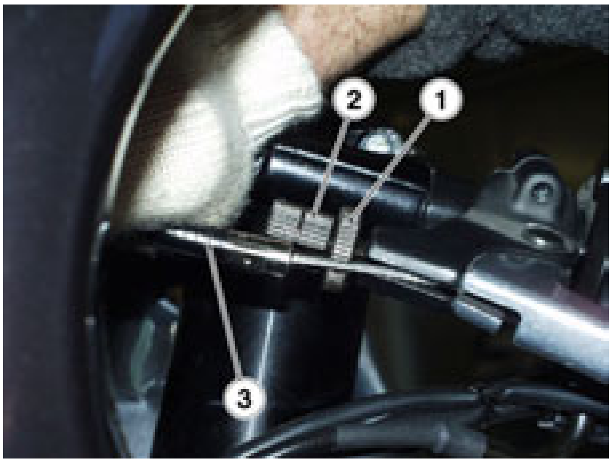
- Release and remove the reservoir mounting screw (1).
- Release and remove the two screws (2) securing the front brake control.

***NOTE** Mark clamp position on the handlebar before removal to ensure correct positioning on assembly.*

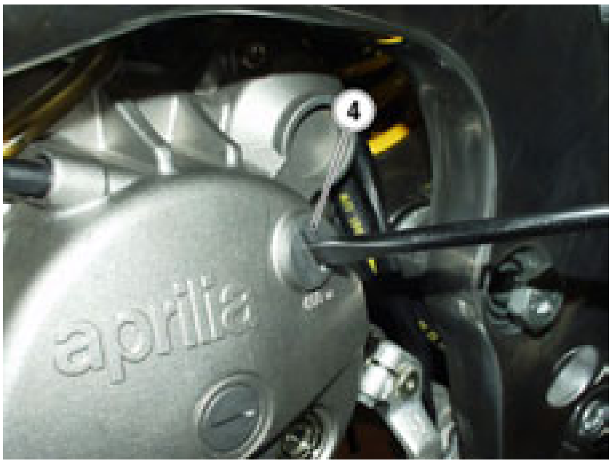
- Remove the clamp.
- Remove the front brake control together with the front brake fluid reservoir.

7.3.5. REMOVING THE CLUTCH CABLE

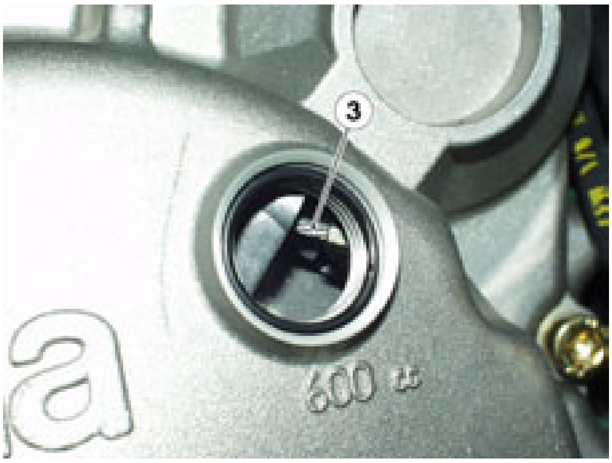
- Slacken the lockring (1) fully.
- Tighten the adjuster (2) fully.
- Detach the clutch cable (3) from the lever.



- Remove the left fairing; see ☞ 7.1.2.
- Undo and remove the gearbox oil filler cap (4).



- With a small flat screwdriver, prise off the clutch cable (3) until releasing it from its anchor point.
- Withdraw the clutch cable (3).



⚠ **WARNING**
Check clutch lever play on refitting; see ☞ 2.11.1.

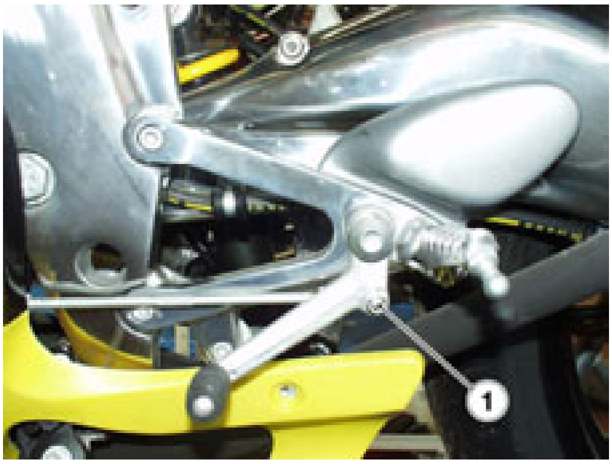
7.3.6. COMPLETE REMOVAL OF THE GEAR SHIFT LEVER

TORQUE WRENCH SETTINGS

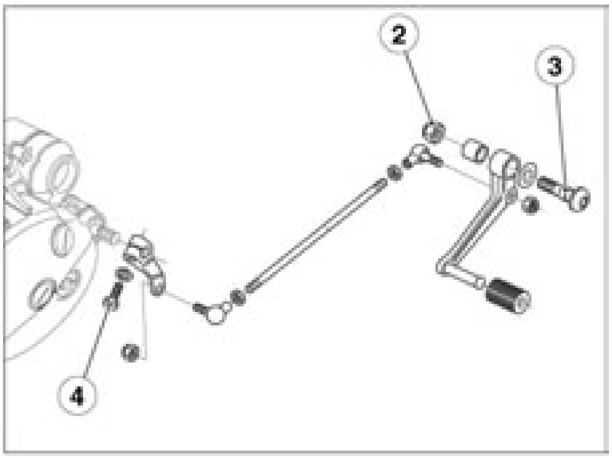
Nut (1)	5 Nm (0.5 Kgm)
Screw (4)	10 Nm (1.0 Kgm)

PARTIAL REMOVAL:

- Undo and release the nut (1).
- Slide the actuating rod off the lever.



- Undo and remove the nut (2).
- Remove the gear shift lever and collect spindle (3) and Belleville washer.



COMPLETE REMOVAL:

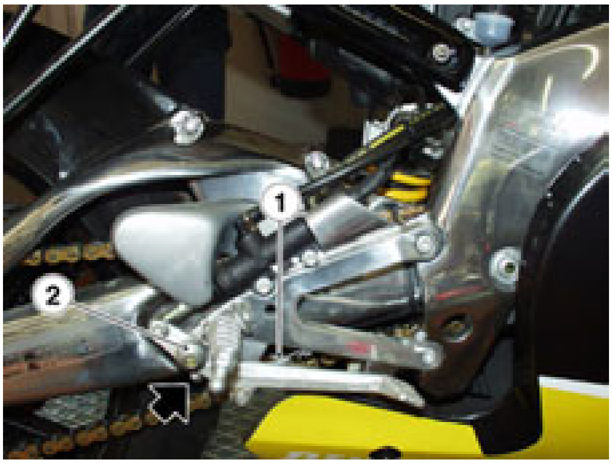
- Remove the left fairing; see 7.1.2.
- Slacken the screw (4) and withdraw the gearbox link rod.
- Undo and remove the nut (2).
- Remove the complete gear shift lever and collect spindle (3) and Belleville washer.

7.3.7. REMOVING THE REAR BRAKE LEVER

TORQUE WRENCH SETTINGS

Lever adjuster screw	10 Nm (1.0 Kgm)

- Unhook the spring (1).
- Release and remove the pivot bolt (2) and collect the washer.
- Remove the rear brake lever.



7.4. CHASSIS

7.4.1. REMOVING THE HANDLEBARS

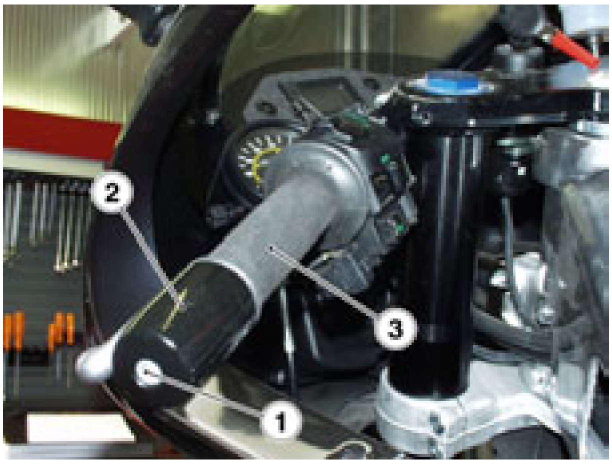
Read ☞ 1.2.1 carefully.

TORQUE WRENCH SETTINGS

Screw (1)	10 Nm (1.0 kgm)

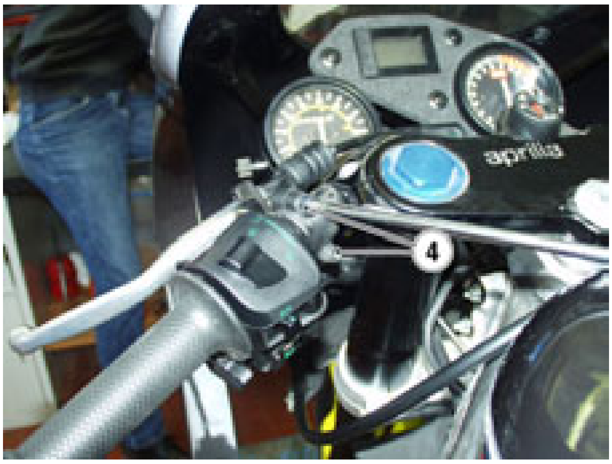
LEFT HANDLEBAR

- Slacken the screw (1) and remove the counterweight (2).
- Fit the nozzle of an air gun between twistgrip (3) and handlebar.
- Blow while twisting the nozzle tip. At the same time, grasp the twistgrip (3) with the other hand and pull outwards to remove.
- Remove the left light dip switch from the handlebar; see ☞ 7.2.5.

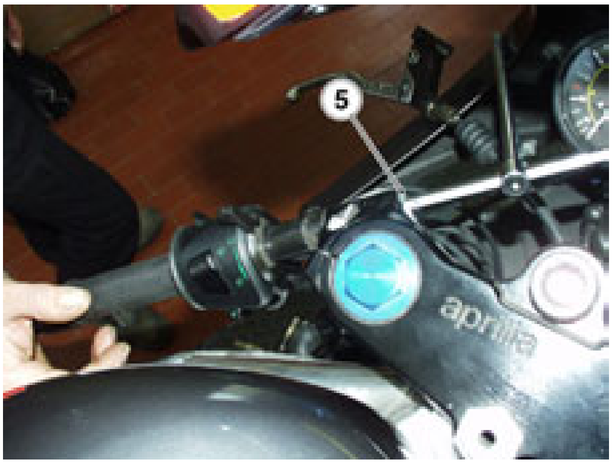


NOTE *You need not detach the connector from the wiring.*

- Release and remove the two screws (4).
- Remove the clamp and move the clutch control aside. The clutch control is retained by the clutch hose.



- Release and remove the screw (5).
- Remove the left handlebar.

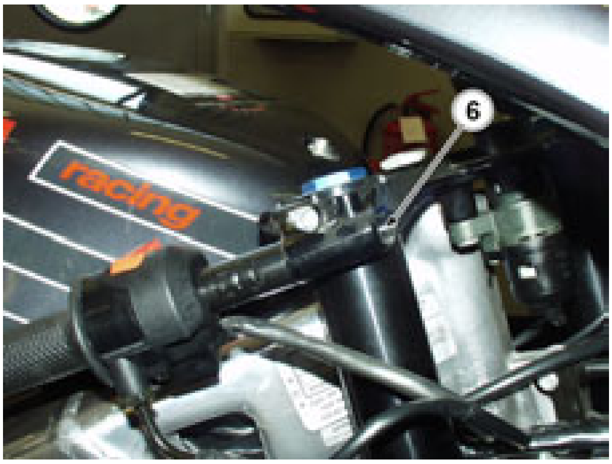


RIGHT HANDLEBAR

- Remove the throttle control; see ☞ 7.3.1.
- Remove the right light dip switch from the handlebar; see ☞ 7.2.4.

NOTE *You need not detach the connector from the wiring.*

- Remove the front brake control partially; see ☞ 7.3.3.
- Release and remove the screw (6).
- Remove the right handlebar.



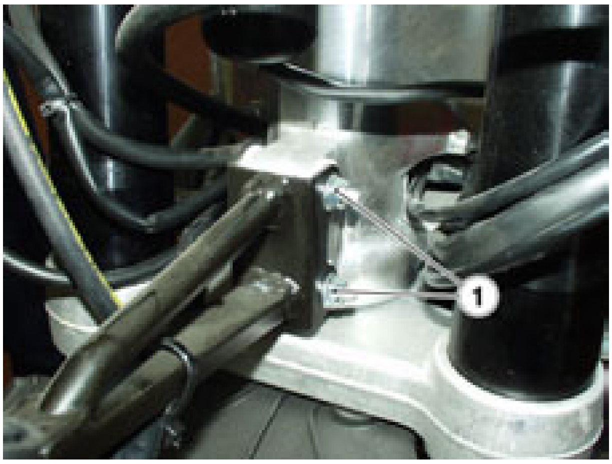
7.4.2. REMOVING THE INSTRUMENT PANEL SUB-FRAME

Read ☞ 1.2.1 **carefully.**

TORQUE WRENCH SETTINGS

Nuts (1)	10Nm (1.0 kgm)

- Remove the instrument panel; see ☞ 7.2.7.
- Release the tie securing the wiring to the instrument panel subframe.



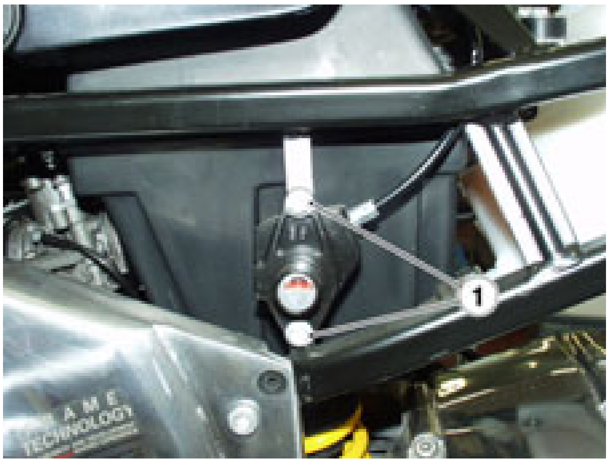
- Release and remove the two nuts (1) and collect the washers.
- Remove the two bolts.
- Remove the subframe.

7.4.3. REMOVING THE SEAT LATCH

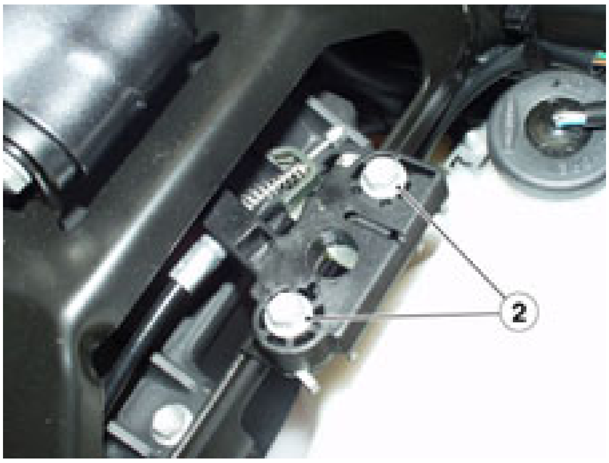
TORQUE WRENCH SETTINGS

Screws (1)	10 Nm (1.0 kgm)

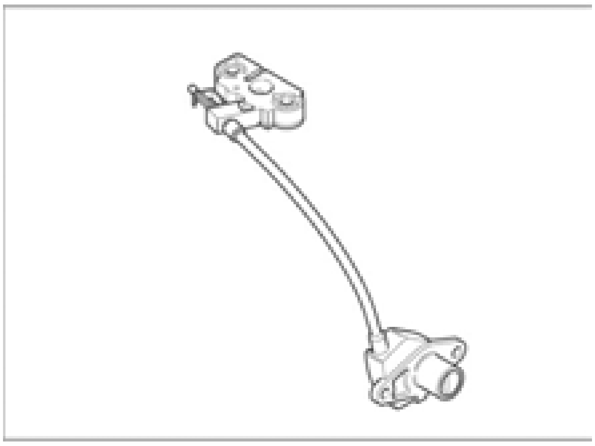
- Remove the seat; see 7.1.1.
- Remove the left cover of the seat subframe; see 7.1.8.
- Release and remove the two bolts (1) and collect the two nuts.



- Release and remove the two screws (2).



- Remove the complete latch.

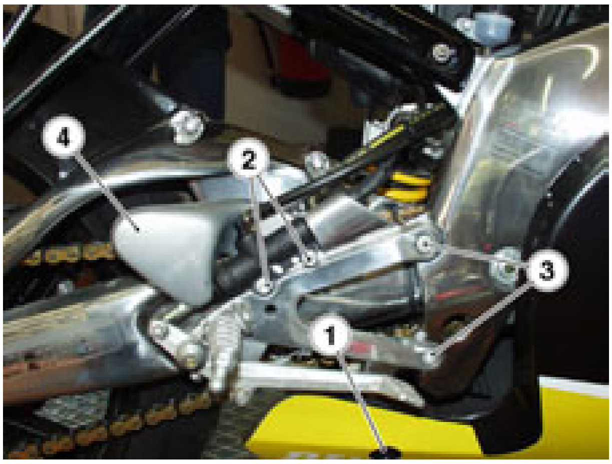


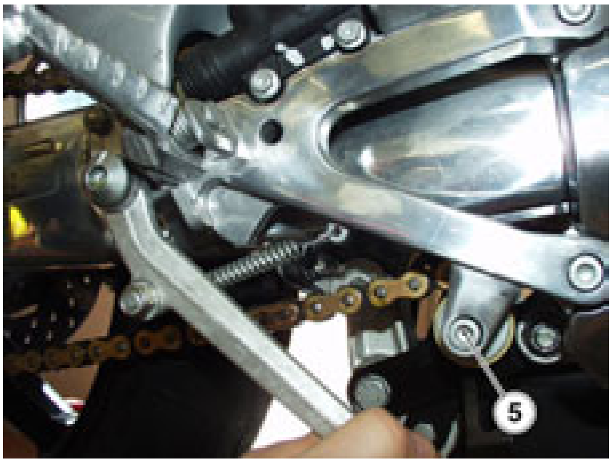
7.4.4. REMOVING THE RIGHT-HAND RIDER FOOTPEG BRACKET

TORQUE WRENCH SETTINGS

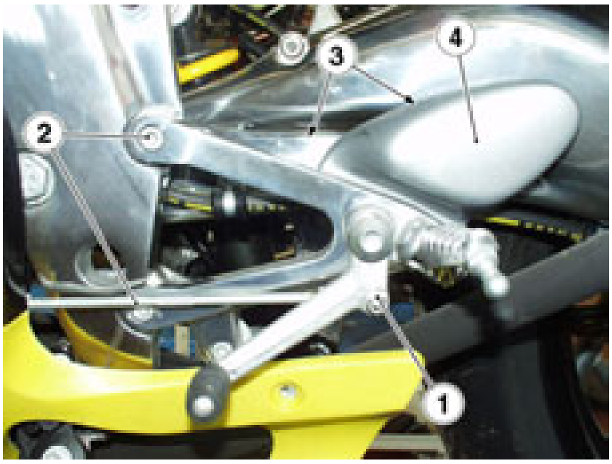
Screw (1)	3 Nm (0.3 Kgm)
Screws (2)	10 Nm (1.0 Kgm)
Screws (3)	22 Nm (2.2 Kgm)
Screw (5)	2 Nm (0.2 Kgm)

- Release and remove the screw (1).
- Release and remove the two screws (2) and collect nuts, bushes, washers and guard (4).
- Release and remove the two screws (3).
- Remove the rider footpeg bracket together with brake master cylinder actuating rod, brake lever and rider footpeg.
- If needed, unscrew the screw (5) and remove the chain tensioner.





7.4.5. REMOVING THE LEFT-HAND RIDER FOOTPEG BRACKET



TORQUE WRENCH SETTINGS

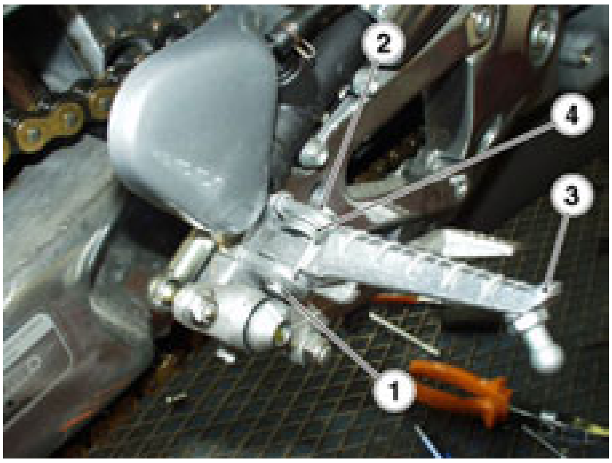
Nut (1)	5 Nm (0.5 Kgm)
Screws (2)	22 Nm (2.2 Kgm)
Screws (3)	3 Nm (0.3 Kgm)

- Undo and remove the nut (1).
- Release and remove the two screws (2).
- Remove the rider footpeg bracket complete with gear shift lever and footpeg.
- If needed, remove the guard (4) and release and remove the two inner screws (3).

7.4.6. REMOVING THE RIDER FOOTPEG

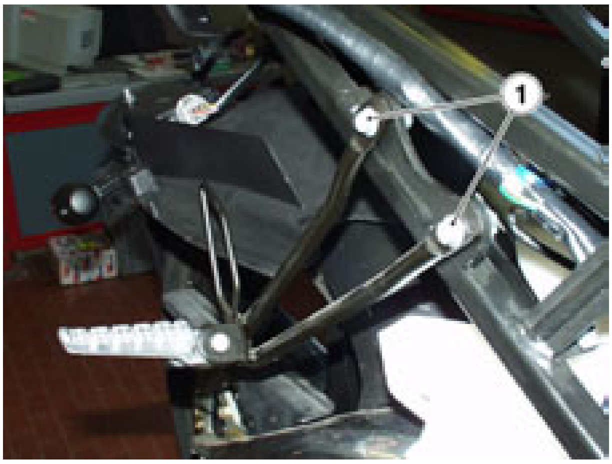
Read ☞ 1.2.1 carefully.

- Remove the retaining ring (1).
- Withdraw the spindle (2).
- Collect footpeg (3) and spring (4).



NOTE *Repeat the process to remove the other rider footpeg if needed.*

7.4.7. REMOVING THE PASSENGER FOOTPEG BRACKETS



TORQUE WRENCH SETTINGS

Screws (1)	13 Nm (1.3 Kgm)

NOTE *The following procedure applies to both footpeg brackets.*

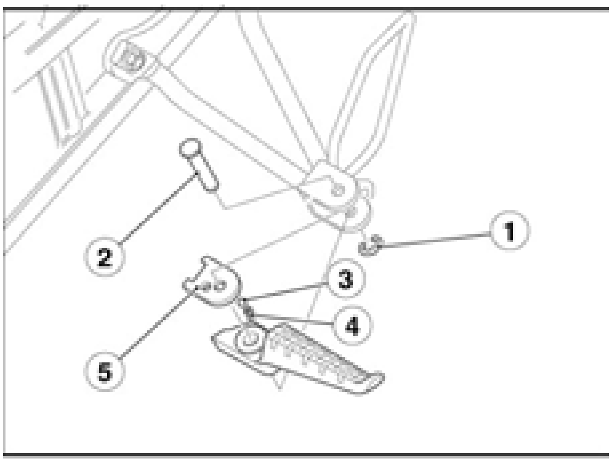
- Remove the side body panel; see 7.1.8.
- Release and remove the two screws (1) and collect the nuts.
- Remove the passenger footpeg bracket.

7.4.8. PASSENGER FOOTPEG REMOVAL

- Remove the retaining ring (1).
- Withdraw the spindle (2).

WARNING
The ball (3) sits on a spring (4) and might be thrown out due to spring action on disassembly. Proceed carefully and make sure to collect the ball.

- Remove the footpeg and collect the shim (5), the ball (3) and the spring (4).

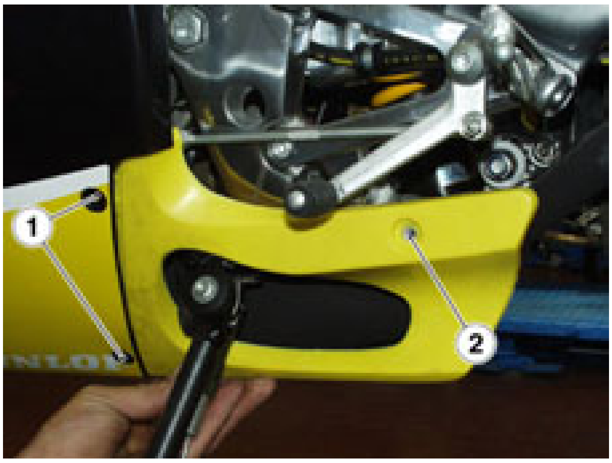


7.4.9. SIDE STAND REMOVAL

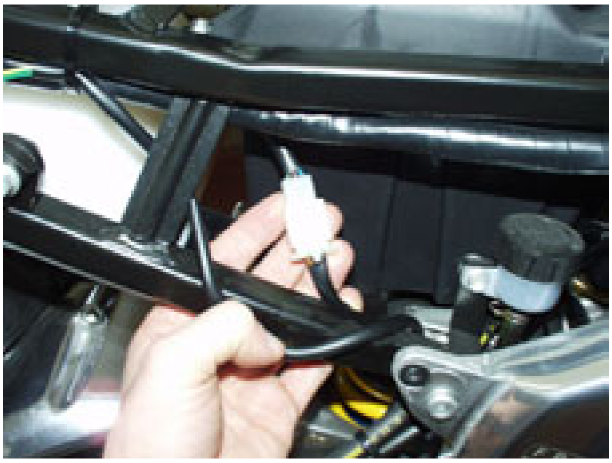
TORQUE WRENCH SETTINGS

Screws (1)	2 Nm (0.2 Kgm)
Screw (2)	3 Nm (0.3 Kgm)
Stand bracket bolts (3)	22 Nm (2.2 Kgm)
Stand switch screw	10 Nm (1.0 Kgm)
Stand pivot bolt	10 Nm (1.0 Kgm)

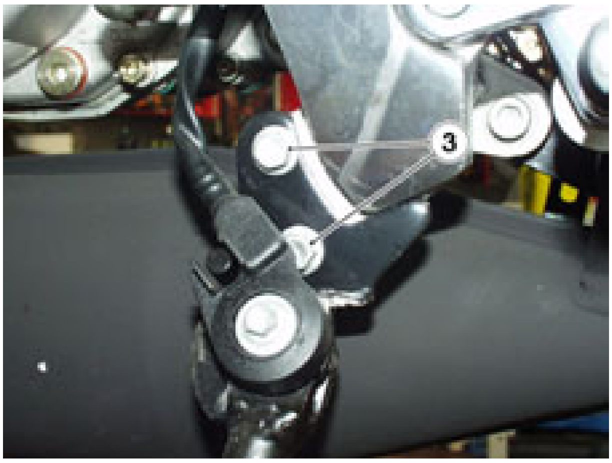
- Place the motorcycle on the rear wheel stand (OPT); see ☞ 1.7.2.
- Lower the side stand.
- Release and remove the two screws (1).
- Release and remove the screw (2).
- Remove the fairing cover.



- Disconnect the side stand connector on the right side of the motorcycle.



- Release and remove the two bolts (3) and collect the nuts at the opposite end.
- Remove the side stand complete with switch and bracket.

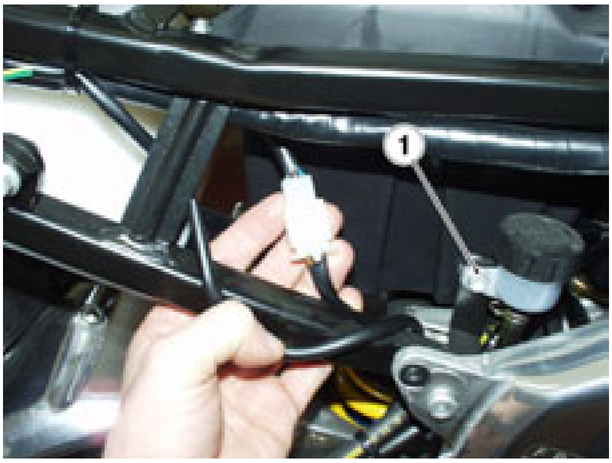


7.4.10. SEAT SUBFRAME REMOVAL

TORQUE WRENCH SETTINGS

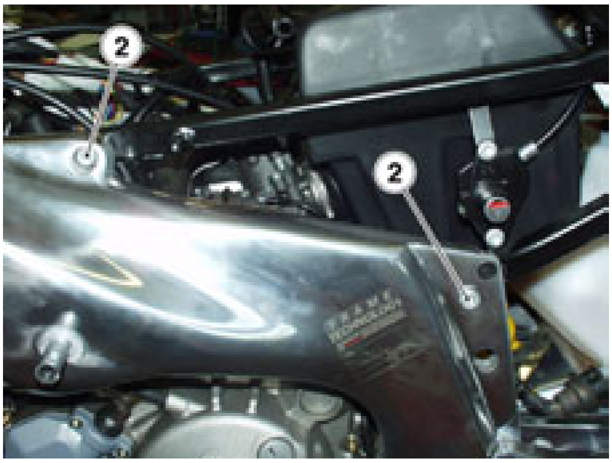
Screw (1)	7 Nm (0.7 Kgm)
Screws (2)	22 Nm (2.2 Kgm)

- Remove the voltage regulator; see 7.2.3.
- Remove the seat subframe lower moulded cover; see 7.1.12.
- Remove the airbox; see 4.2.2.
- Remove the oil tank; see 3.1.1.
- Remove both passenger footpeg brackets; see 7.4.7.
- Remove the seat latch; see 7.4.7.
- Release and remove the screw (1) and collect the nut.
- Move aside the rear brake fluid reservoir.



WARNING
Keep the rear brake fluid reservoir in a vertical position to avoid spilling brake fluid. Any brake fluid spills could lead to a dangerous condition.

- Release the seat subframe from all wiring ties.
- Release and remove the two screws (2) working on both sides of the motorcycle.
- Remove the seat subframe.



7.4.11. FRAME REMOVAL

Read 1.2.1 carefully.

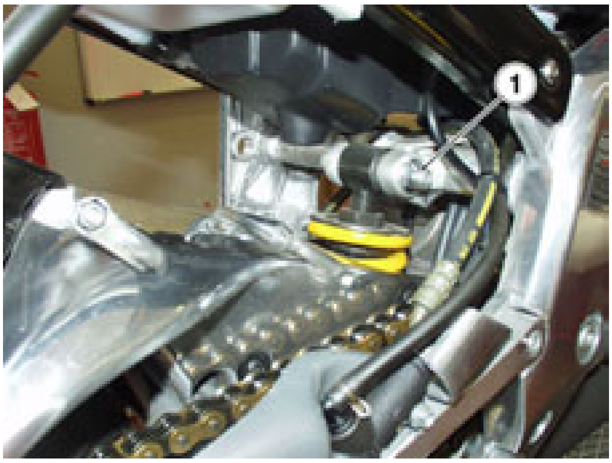
TORQUE WRENCH SETTINGS

Shock absorber to frame (1)	50 Nm (5.0 kgm)
Linkages to frame (2)	50 Nm (5.0 kgm)
Footpeg bracket screws (3)	22 Nm (2.2 Kgm)
Upper screws (5)	22 Nm (2.2 Kgm)

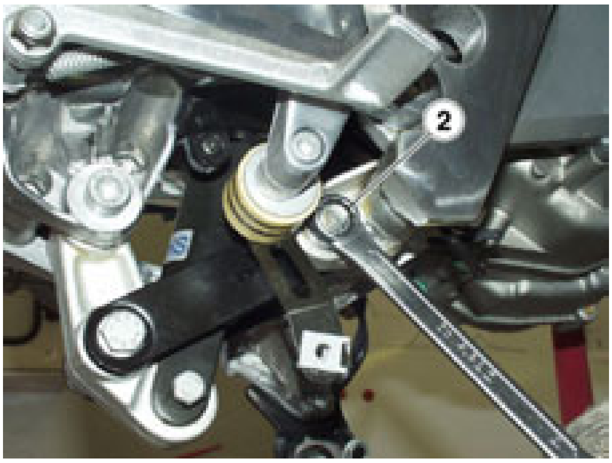
***NOTE** Each procedure is cross-referred to the relevant section of the manual and some of the operations described there may not be necessary for the job at hand. To avoid redundant work, always make sure you really need to remove a particular component before proceeding.*

- Remove the engine from the frame; see 6.2.3
- Remove the instrument panel subframe; see 7.4.2
- Remove the front end complete with front wheel assembly; see 7.9.2
- Disconnect the two horn connectors.

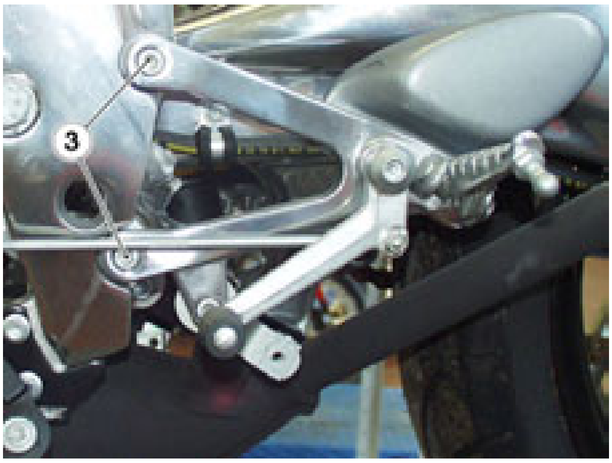
- Working from the right-hand side, undo and remove the top nut (1).
- Remove the bolt from the opposite end and collect the washer.



- Working from the right-hand side, undo and remove the nut (2).
- Remove the bolt from the opposite end and collect the washer.
- Remove the rear swinging arm together with the shock absorber; see 7.11.1.
- Remove the side stand; see 7.4.9.
- Remove the right-hand rider footpeg bracket; see 7.4.4.



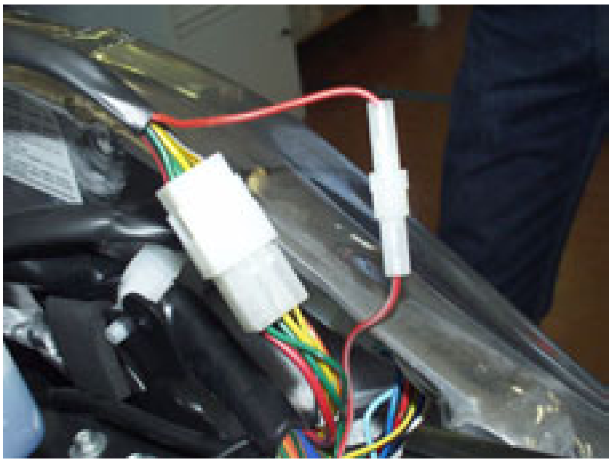
- Release and remove the two screws (3).
- Remove the left-hand rider footpeg bracket.



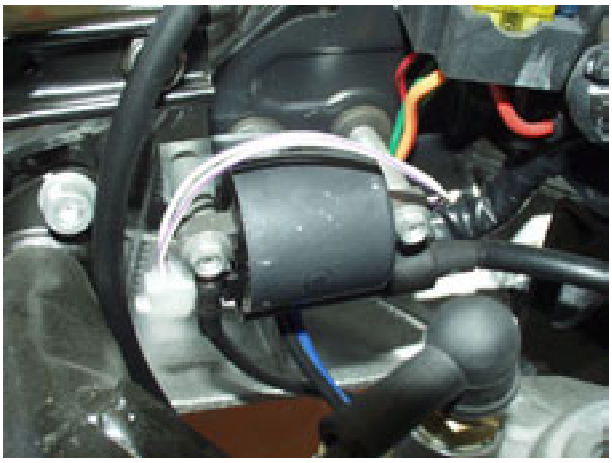
- Disconnect the connector of the starter relay.

- Disconnect the connector of the left light dip switch.

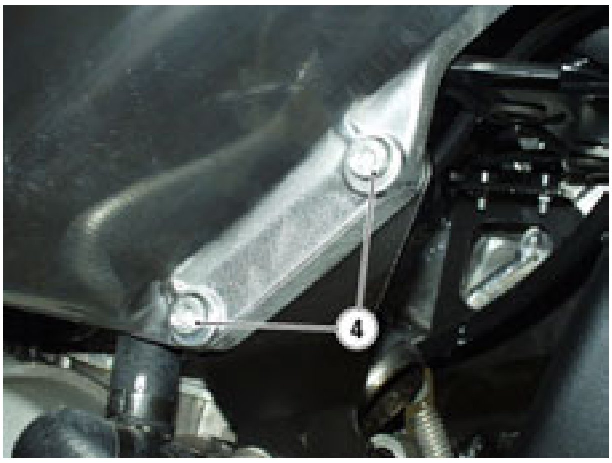
- Disconnect the two connectors of the right light dip switch.



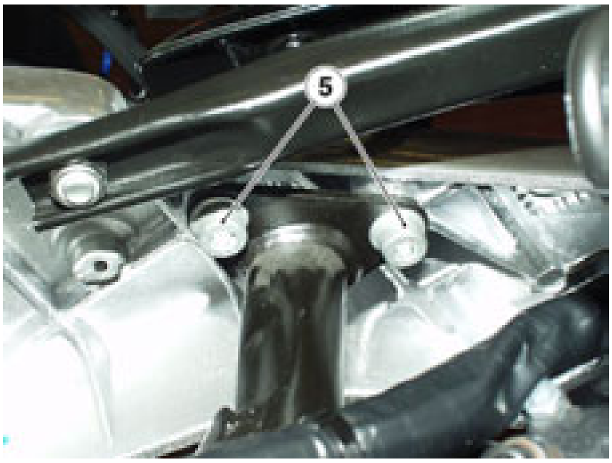
- Disconnect coil connector and grounding cable.



- Remove the seat subframe complete with carburetor, oil tank and airbox, see 7.4.10
- Working on both sides of the motorcycle, release and remove the two screws (4) at the front end.
- Remove the two radiator brackets mounted to the battery frame.



- Working on both sides of the motorcycle, release and remove the two upper screws (5).
- Remove the frame head plate.



7.4.12. FRAME INSTALLATION

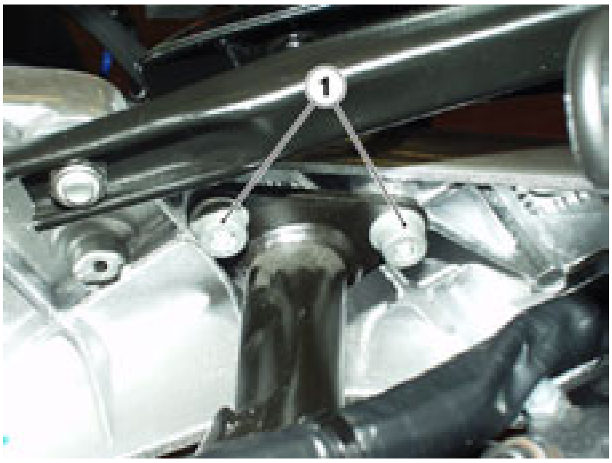
Read 1.2.1 carefully.

TORQUE WRENCH SETTINGS

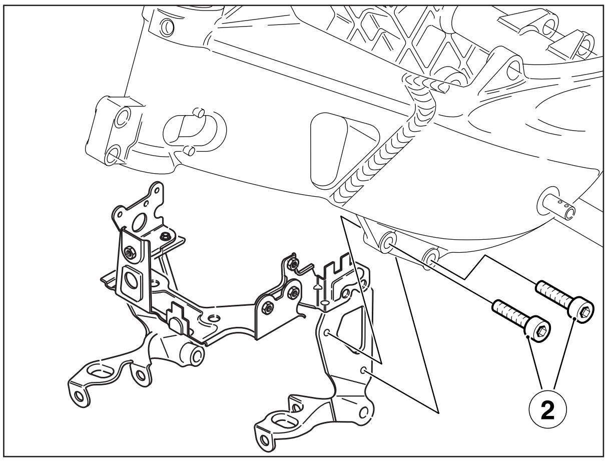
Upper screws (1)	22 Nm (2.2 Kgm)
Footpeg bracket screws (3)	22 Nm (2.2 Kgm)
Shock absorber to frame (4)	50 Nm (5.0 kgm)
Linkages to frame (5)	50 Nm (5.0 kgm)

NOTE *Each procedure is cross-referred to the relevant section of the manual and some of the operations described there may not be necessary for the job at hand. To avoid redundant work, always make sure you really need to remove a particular component before proceeding.*

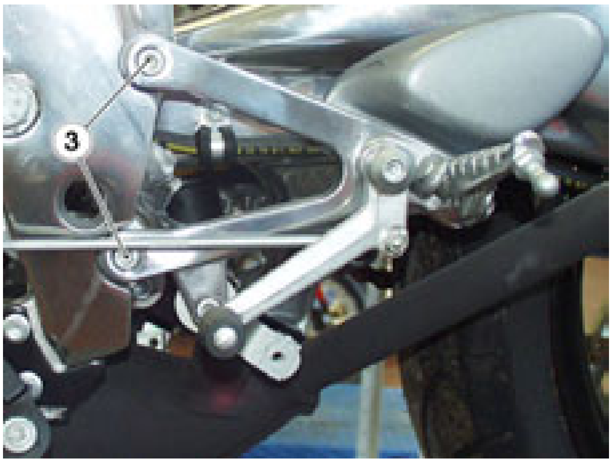
- Position the frame head plate.
- Working on both sides of the motorcycle, tighten the two upper screws (1).



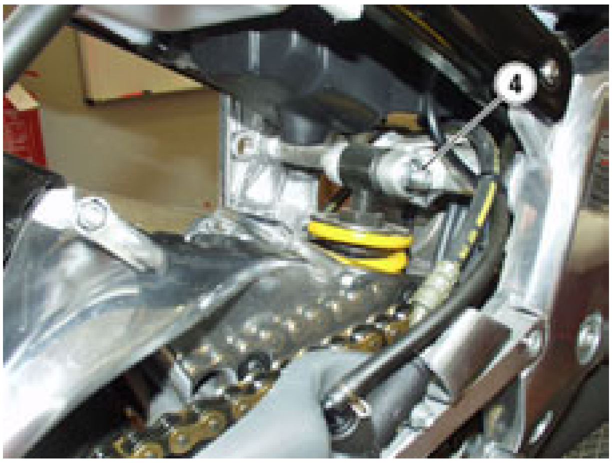
- Locate the two radiator brackets to the battery frame.
- Working on both sides of the motorcycle, tighten the two screws (2) at the front end.
- Install the seat subframe; see 7.4.10.
- Install the side stand; see 7.4.9.
- Install the front end; see 7.9.4.
- Install the instrument panel/front fairing subframe; see 7.4.2



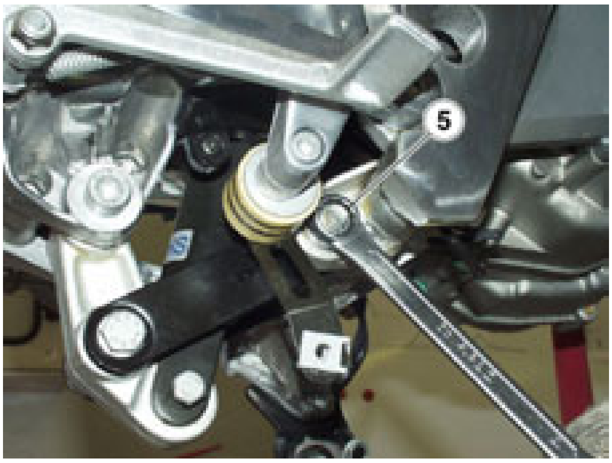
- Install the right-hand rider footpeg bracket; see 7.4.4.
- Position the left-hand rider footpeg bracket.
- Tighten the two screws (3).
- Install the engine; see 6.2.4



- Position the rear swinging arm complete with shock absorber.
- Insert the swinging arm spindle.
- Insert the shock absorber top bolt (4) from the left side and tighten the nut.

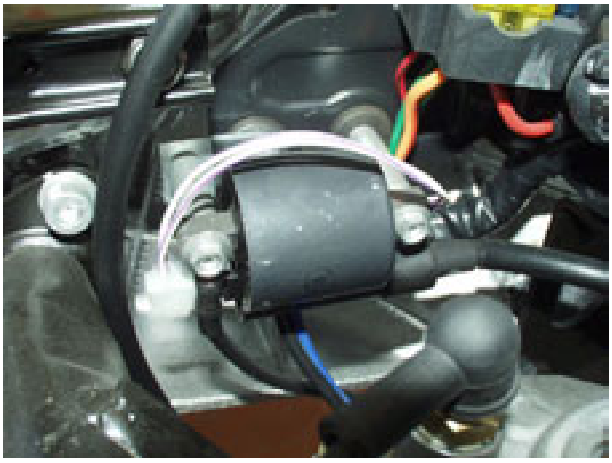


- Locate the linkages to the frame.
- Insert the bolt from the left side and tighten the nut (5).
- Adjust the swinging arm; see ☞ 2.17.3.

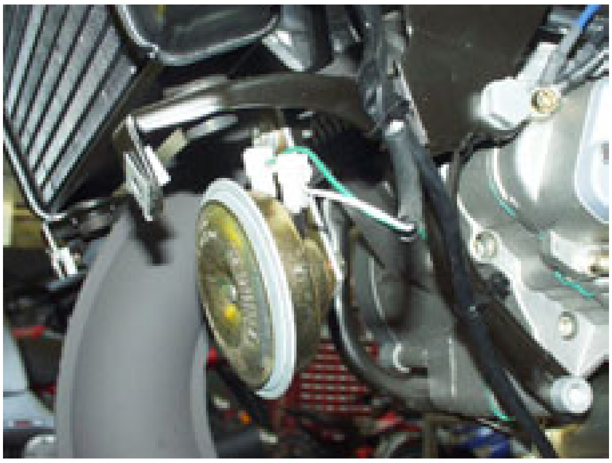


- Connect the following electrical connectors in the order:

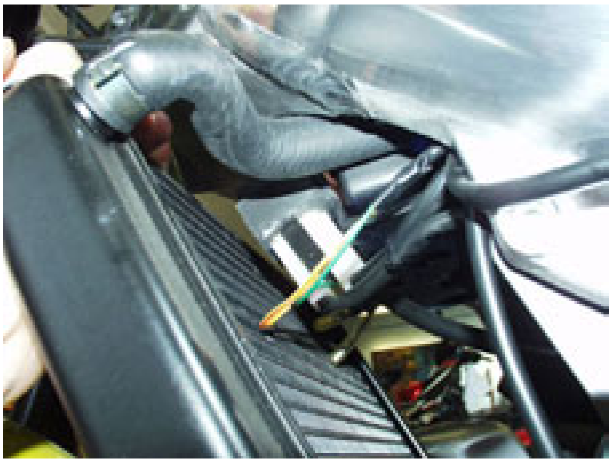
- coil and coil ground;



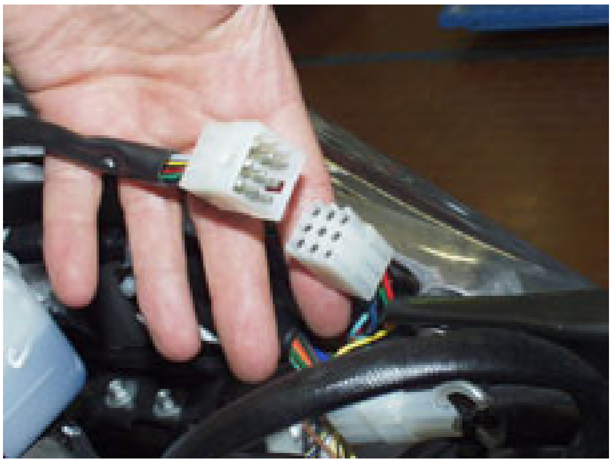
- horn;



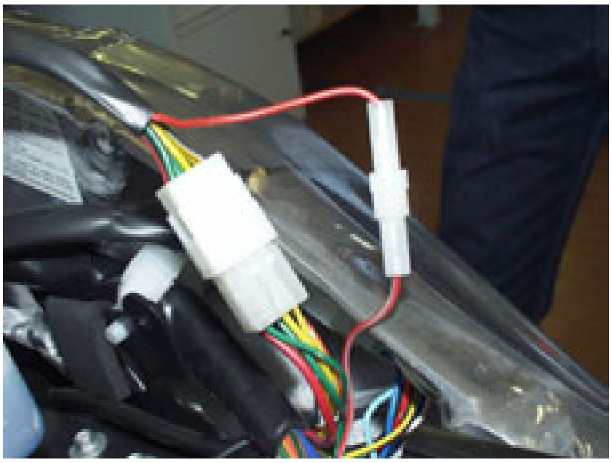
- starter relay;



- left light dip switch;



- both connectors of the right light dip switch.



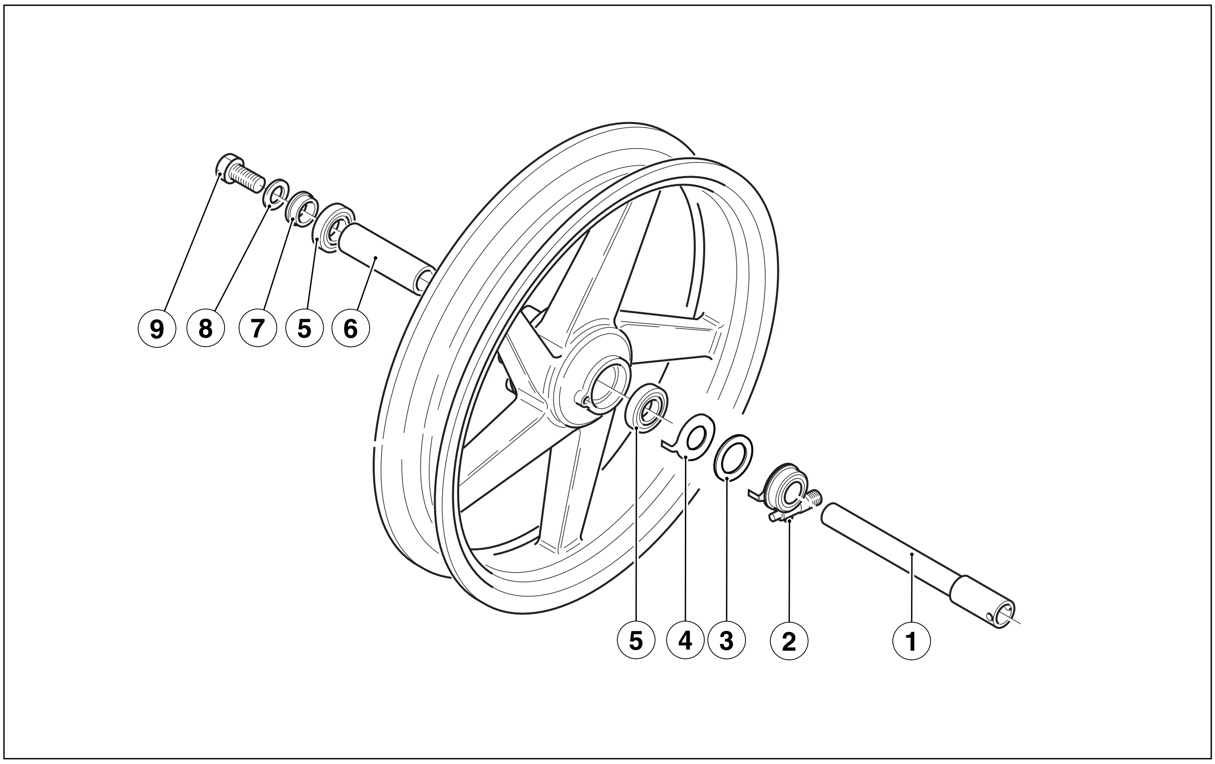
After re-installing the frame, check the following:

- Ensure that all components are fastened securely.
- Check that wiring and cables are properly routed and fastened.
- Ensure that all electrical connectors are properly fitted to the matching connectors.
- Turn the handlebars and check that cables and tubes do not bind.

- Refit the fairings.

7.5. FRONT WHEEL

7.5.1. FRONT WHEEL DIAGRAM



Key

1. Wheel spindle
2. Speedometer drive
3. Seal
4. Drive ring
5. Front wheel bearing
6. Bearing spacer
7. Front wheel right-hand outer spacer
8. Washer
9. Wheel spindle special bolt

NOTE *Grease the wheel spindle (1).*

7.5.2. REMOVING THE COMPLETE FRONT WHEEL

Read 1.2.1 carefully.

TORQUE WRENCH SETTINGS

Brake caliper mounting bolts (1)	22 Nm (2.2 kgm).
Wheel spindle bolt (2)	80 Nm (8 kgm).
Wheel spindle clamp screws (3)	12 Nm (1.2 kgm)

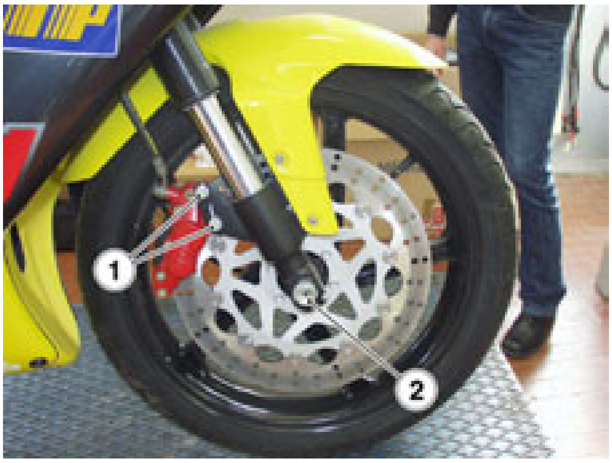
WARNING
Use great care during wheel removal to avoid damaging the brake lines, discs and pads.

- Place the motorcycle on the special rear wheel stand (OPT); see 1.7.2.

- Place the motorcycle on the special front wheel stand (OPT); see 1.7.1.

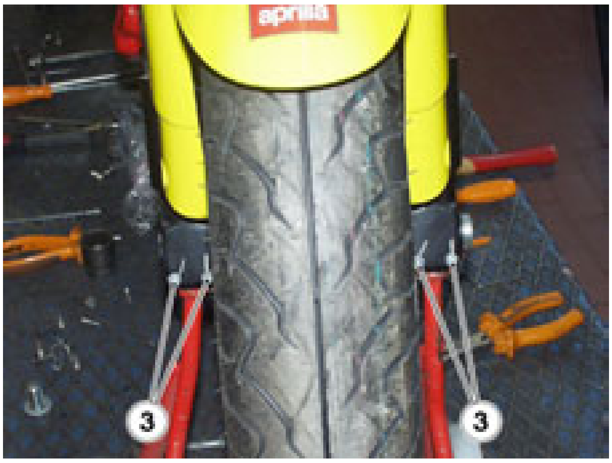
NOTE *Ensure that the motorcycle is safely supported and stable.*

- Have an assistant hold the handlebars steady in position as in forward travel so that the steering cannot move.
- Release and remove the two mounting bolts (1) of the front brake caliper.
- Remove the brake caliper from the brake disc, but leave the caliper attached to the brake hose.

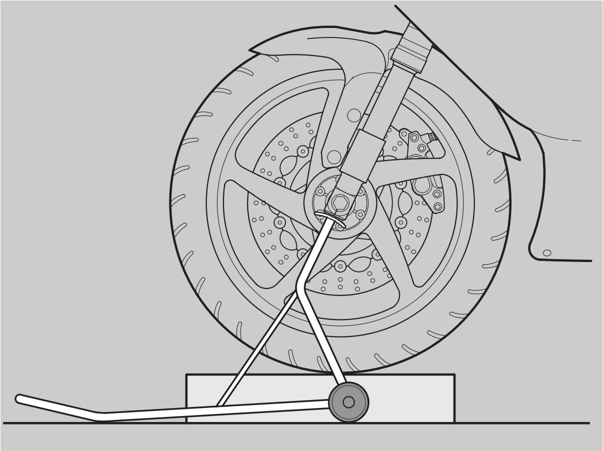


WARNING
Do not operate the front brake lever when the calipers are not in place, or the pistons might fall out leading to brake fluid spillage.

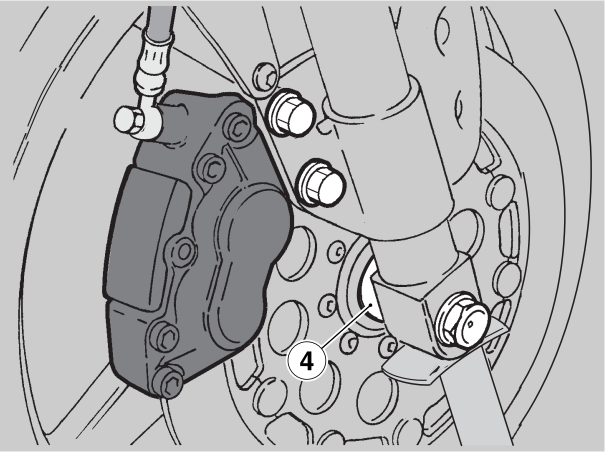
- Release and remove the screw (2) and collect the washer.
- Slacken but do not remove the four wheel spindle clamp bolts (3).



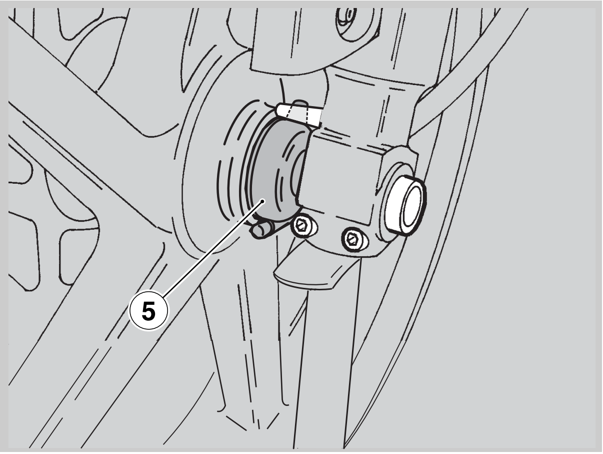
- Place a support under the wheel tyre to hold the wheel steady once released.
- Extract the wheel spindle from the left side.



- Remove the wheel pulling from the front and collect the spacer (4).



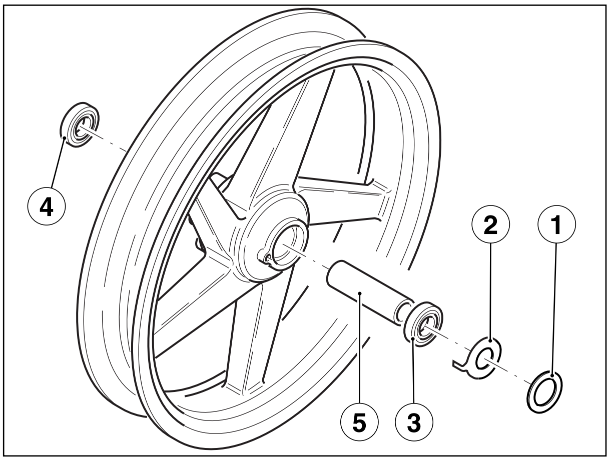
- Disengage the speedometer drive (5).



7.5.3. FRONT WHEEL DISASSEMBLY

Read 1.2.1 carefully.

- Remove the front wheel; see 7.5.2.
- Clean both ends of the wheel hub with a cloth.
- Remove the seals (1).
- Remove the drive ring (2).
- Remove the left-hand bearing (3) using a suitable bearing extractor.
- Remove the right-hand bearing (4) using a suitable bearing extractor.



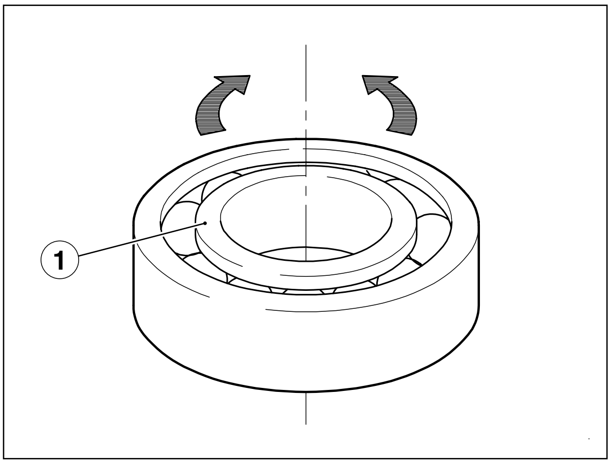
WARNING
Inspect the bearings after each removal; see 7.5.4. Replace as required.

- Collect the inner spacer (5).
- Clean the wheel hub bore thoroughly.
- Wash all components using clean detergent.

WARNING
Refit the bearings using a drift with the same diameter as the bearing outer ring.
Do not tap the balls or the inner ring.
Make sure to push the following components into firm contact with the adjacent parts:
- **right-hand bearing (4) with hub;**
- **spacer (5) with right-hand bearing (4);**
- **left-hand bearing (3) with spacer (5).**

7.5.4. FRONT WHEEL COMPONENT INSPECTION

WARNING
Check that all components are in perfect condition. Inspect the following components with special care.

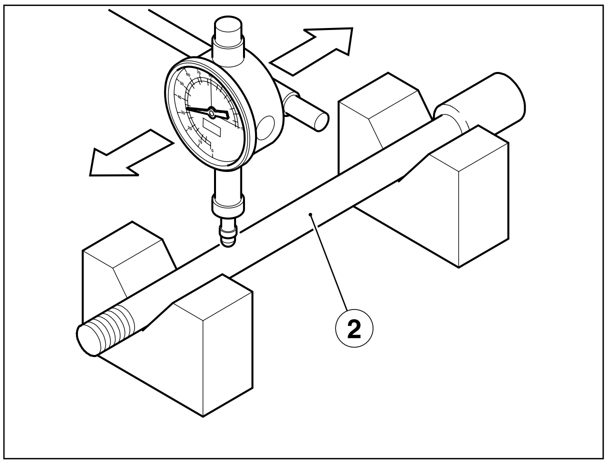


BEARINGS

Rotate the inner ring (1) manually. The ring should turn smoothly, with no hardness or noise.
There should be no end float.
Replace any bearings that do not meet the above requirements.

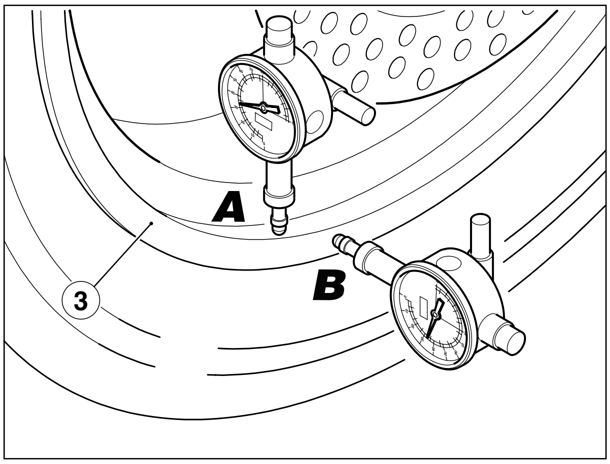
SEALS

Inspect the seals and replace if damaged or badly worn.



WHEEL SPINDLE

Check spindle (2) run-out using a dial gauge. Replace the spindle (2) when run-out exceeds the maximum limit allowed.
Wheel spindle run-out limit: 0.25 mm.



WHEEL RIM

Use a dial gauge to ensure that wheel rim (3) radial (A) and axial (B) run-out does not exceed the maximum limit allowed.
Exceeding run-out is normally due to worn or damaged bearings.
Replace the bearings first, then check run-out again.
Replace the wheel rim (3) if it still exceeds the maximum limit allowed.
Wheel rim radial and axial run-out limit: 2 mm.

TYRE

Check tyre condition; see ☞ 2.19.1.

7.5.5. REFITTING THE COMPLETE FRONT WHEEL

Read 1.2.1 carefully.

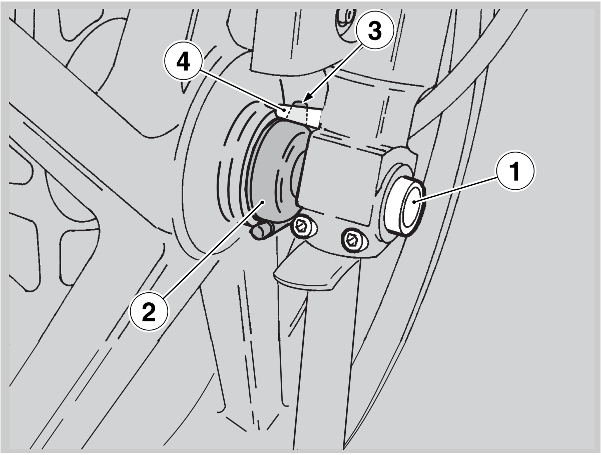
TORQUE WRENCH SETTINGS

Caliper mounting bolts (7)	22 Nm (2.2 kgm).
Wheel spindle bolt (6)	80 Nm (8 kgm).
Wheel spindle clamp screws (8)	12 Nm (1.2 kgm)

- Smear a light coat of grease over the total length of the wheel spindle (1); see 1.8.1.

WARNING
Use great care when refitting the wheel to avoid damaging the brake lines, brake discs and brake pads.

- Position the housing (3) of the speedometer drive (2) correctly to the special anti-rotation peg (4).

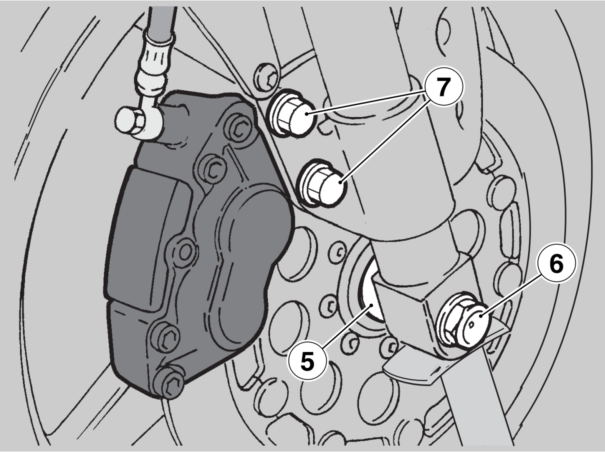


***NOTE** The spacer (5) must have the larger diameter face pointing to the right fork leg.*

- Position the spacer (5) to the wheel.
- Place the wheel between the fork legs above the support.

DANGER
Do not attempt to align the holes by putting your fingers into the holes. This could result in severe personal injury.

- Move the wheel until the centre hole aligns with the holes in the forks.
- Slide the wheel spindle (1) fully home.



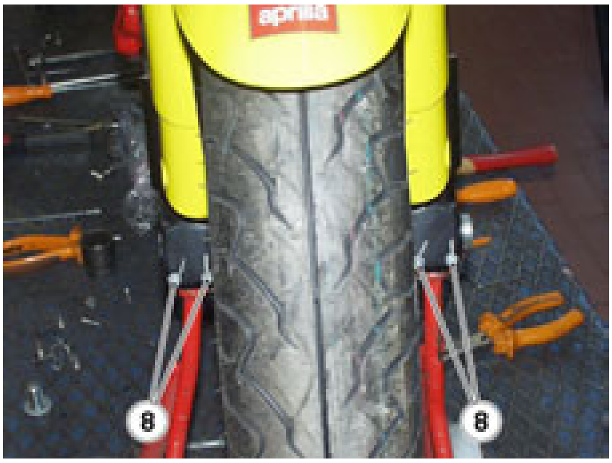
- Fit the washer and snug the screw (6) hand-tight.
- Lock out wheel spindle (1) rotation.
- Tighten the screw (6) fully.

WARNING
Use great care or you might damage the brake pads.

- Fit the brake caliper to the brake disc with the mounting holes aligned with the holes in the caliper carrier.

WARNING
Replace both caliper mounting bolts (7) with new bolts of the same type fitted originally.

- Start the two caliper mounting bolts (7) in their holes and tighten.
- Hold in the front brake lever and press down on the handlebars repeatedly to pump the front fork up and down. This will allow the fork legs to seat themselves properly.
- Tighten the two wheel spindle clamp bolts (8) working on both sides.
- Remove the front wheel stand (OPT); see 1.7.1.
- Remove the rear wheel stand (OPT); see 1.7.2.

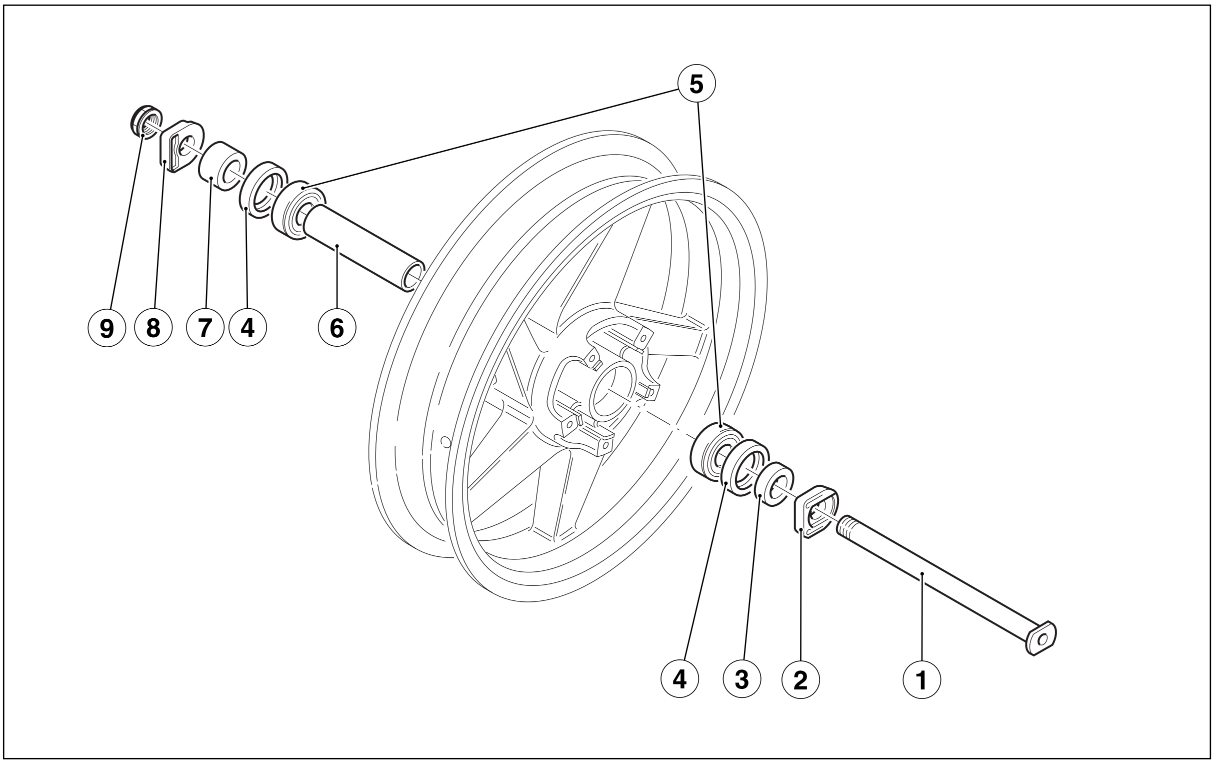


WARNING
After refitting the wheel, work the front brake lever repeatedly and check for proper operation of the brake.

Ensure that the wheel is properly centred.

7.6. REAR WHEEL

7.6.1. REAR WHEEL DIAGRAM



Key

10. Rear wheel spindle
11. Left chain slider
12. Left outer spacer
13. Rear wheel oil seal
14. Rear wheel bearing
15. Rear wheel inner spacer
16. Wheel right outer spacer
17. Right chain slider
18. Rear wheel spindle nut

NOTE *Grease the wheel spindle (1).*